

# SECTION A. DETAILED STATISTICAL TABLES

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# TABLE NOTES

## CLASSIFICATION OF REPORTING UNITS

The basic reporting unit was the company, enterprise, or firm that included all establishments under common ownership or control. All research and development (R&D) expenditures and all scientists and engineers of each company were classified into a single standard industrial classification (SIC) code and size category.

## COMPANY SIZE CLASS

Companies were categorized by their total number of domestic employees. The following are the six company size classes used in this report:

1. Fewer than 500 employees
2. 500 to 999 employees
3. 1,000 to 4,999 employees
4. 5,000 to 9,999 employees
5. 10,000 to 24,999 employees
6. 25,000 or more employees

## CURRENT AND CONSTANT DOLLARS

Statistics in all tables are reported in current dollars. Constant dollars are also presented in the summary trend tables for 1995 (A-1, A-26, A-27, and A-28) and 1996 (A-1a, A-19a, A-20a, and A-21a). Gross domestic product (GDP) implicit price deflators were used to convert current to constant dollars.

## DISCLOSURE AND SUPPRESSION OF STATISTICS

The Bureau of the Census conducts the survey under title 13 of the United States Code, which prohibits publication or release of data or statistics that may reveal information about individual companies. Therefore, the data in some of the table cells may have been deleted and replaced with "(D)." This occurs when a small number of companies account for a large percentage of the R&D funds or scientists and engineers in a particular

data cell. Although publication of certain cells may be withheld, the estimates in the cells are always included in totals. The tables most often affected by this rule are those that contain data on Federal support to companies for R&D performance.

## GEOGRAPHIC STATISTICS

The statistics cover only those operations located in the 50 States and the District of Columbia. Statistics on company-sponsored R&D performed outside the United States by foreign subsidiaries of U.S. domestic companies are included in 1995 tables A-11 and A-12, and in 1996 table A-11a, but are excluded from all other tables.

## IMPUTATION

Missing data are imputed for some data items. Therefore, the statistics in some of the table cells may be accompanied by the notation "(S)," which indicates that the imputation rate—the percentage of the statistic not reported by respondents and consequently estimated—exceeds 50 percent for that item. In such cases the user should be aware that the estimate may be statistically unreliable. See tables B-4 and B-4a in section B for imputation rates for specific items.

## INDUSTRY CLASSIFICATION

One SIC code was assigned to each company. A single SIC code was assigned to multiestablishment companies based on the code that represented the most dominant aggregated activity for that firm in terms of total payroll. Statistics for the following industry groupings are published in this report (SIC codes are shown in parentheses<sup>1</sup>):

- Food, kindred, and tobacco products (20,21)
- Food and kindred products (20)
- Tobacco products (21)
- Textiles and apparel (22,23)
- Textiles mill products (22)
- Apparel (23)
- Lumber, wood products, and furniture (24,25)
- Lumber and wood products, except furniture (24)

<sup>1</sup>When the 1995 and 1996 samples were drawn, the 1987 revision of the SIC system was in effect.

Furniture and fixtures (25)	Telephone communications (481)
Paper and allied products (26)	Other communications (482–484,489)
Printing, publishing and allied industries (27)	Electric, gas, and sanitary services (49)
Chemicals and allied products (28)	Other transportation and utilities (40–42,44–47)
Industrial chemicals (281–82,286)	Trade (50–59)
Drugs and medicines (283)	Finance, insurance, and real estate (60–65,67)
Other chemicals (284–85,287–89)	Services (701,72,73,75–81,83,84,87,89)
Petroleum refining and extraction (13,29)	Business services (73)
Rubber products (30)	Computer and data processing services (737)
Leather and leather goods (31)	Other business services (731–736,738)
Stone, clay, and glass products (32)	Health services (80)
Primary metals (33)	Offices and clinics of medical doctors, hospitals, medical and dental labs (801,806,807)
Ferrous metals and products (331–32,3398–99)	Other health services (802–805,808–809)
Nonferrous metals and products (333–36)	Engineering and management services (87)
Fabricated metal products (34)	Engineering, architectural, and surveying (871)
Machinery (35)	Research, development and testing (873)
Office, computing, and accounting machines (357)	Other engineering and management services (872,874)
Other machinery, except electrical (351–56, 358–59)	Other services (701,72,75–79,81,83,84,89)
Electrical equipment (36)	Other nonmanufacturing industries—agricultural services, forestry, fishing, hunting and mining (07–12,14); and construction (15–17).
Radio and TV receiving equipment (365)	
Communication equipment (366)	
Electronic components (367)	
Other electrical equipment (361–64,369)	
Transportation equipment (37)	
Motor vehicles and motor vehicles equipment (371)	
Other transportation equipment (373–75,379)	
Aircraft and missiles (372,376) <sup>2</sup>	
Professional and scientific instruments (38)	
Scientific and mechanical measuring instruments (381–82)	
Optical, surgical, photographic, and other instruments (384–87)	
Miscellaneous manufacturing industries (39)	
Other manufacturing industries not elsewhere classified	
Transportation and utilities (40–42,44–49)	
Communications (48)	

<sup>2</sup> Because of the close similarity of their R&D activities, companies primarily engaged in the manufacture of ordnance and accessories, including complete guided missiles, are grouped with companies primarily engaged in the manufacture of aircraft and parts.

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Table A-1. Trends in industrial R&amp;D performance, by source of funds, in current and constant dollars: 1953-95

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Year	Total R&D		Federal		Company 1/	
	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars
	[Dollars in millions]					
1953.....	\$3,630	\$17,988	\$1,430	\$7,086	\$2,200	\$10,902
1954.....	4,070	19,941	1,750	8,574	2,320	11,367
1955.....	4,640	22,372	2,180	10,511	2,460	11,861
1956.....	6,605	30,764	3,328	15,501	3,277	15,263
1957.....	7,731	34,856	4,335	19,545	3,396	15,311
1958.....	8,389	36,940	4,759	20,956	3,630	15,984
1959.....	9,618	41,908	5,635	24,553	3,983	17,355
1960.....	10,509	45,161	6,081	26,132	4,428	19,029
1961.....	10,908	46,338	6,240	26,508	4,668	19,830
1962.....	11,464	48,087	6,434	26,988	5,029	21,095
1963.....	12,630	52,363	7,270	30,141	5,360	22,222
1964.....	13,512	55,196	7,720	31,536	5,792	23,660
1965.....	14,185	56,831	7,740	31,010	6,445	25,821
1966.....	15,548	60,569	8,332	32,458	7,216	28,111
1967.....	16,385	61,854	8,365	31,578	8,020	30,276
1968.....	17,429	63,057	8,560	30,970	8,869	32,088
1969.....	18,308	63,262	8,451	29,202	9,857	34,060
1970.....	18,067	59,275	7,779	25,522	10,288	33,753
1971.....	18,320	57,143	7,666	23,911	10,654	33,231
1972.....	19,552	58,504	8,017	23,989	11,535	34,515
1973.....	21,249	60,195	8,145	23,074	13,104	37,122
1974.....	22,887	59,493	8,220	21,367	14,667	38,126
1975.....	24,187	57,465	8,605	20,444	15,582	37,021
1976.....	26,997	60,599	9,561	21,461	17,436	39,138
1977.....	29,825	62,882	10,485	22,106	19,340	40,776
1978.....	33,304	65,443	11,189	21,987	22,115	43,456
1979.....	38,226	69,212	12,518	22,665	25,708	46,547
1980.....	44,505	73,769	14,029	23,254	30,476	50,515
1981.....	51,810	78,488	16,382	24,817	35,428	53,671
1982.....	58,650	83,583	18,545	26,429	40,105	57,154
1983.....	65,268	89,213	20,680	28,267	44,588	60,946
1984.....	74,800	98,525	23,396	30,817	51,404	67,708
1985.....	84,239	107,270	27,196	34,631	57,043	72,638
1986.....	87,823	108,989	27,891	34,613	59,932	74,376
1987.....	92,155	110,950	30,752	37,024	61,403	73,926
1988.....	97,015	112,690	30,343	35,246	66,672	77,445
1989.....	102,055	113,748	28,554	31,826	73,501	81,923
1990.....	109,727	117,230	28,125	30,048	81,602	87,182

See explanatory information and SOURCE at end of table.

**Table A-1. Trends in industrial R&D performance, by source of funds, in current and constant dollars: 1953-95**

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Year	Total R&D		Federal		Company 1/	
	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars
	[Dollars in millions]					
1991.....	116,952	120,173	26,372	27,098	90,580	93,074
1992.....	119,110	119,110	24,722	24,722	94,388	94,388
1993.....	117,400	114,380	22,809	22,222	94,591	92,158
1994 .....	119,595	113,802	22,463	21,375	97,131	92,426
1995 .....	132,103	122,590	23,451	21,762	108,652	100,828

1/ Company-funded R&D includes funds for industrial R&D performed within company facilities from all sources except the Federal Government. The funds predominantly are the company's own, but also include funds from outside organizations such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments. Company-financed R&D not performed within the company is excluded.

**NOTES:** 1992 gross domestic product (GDP) implicit price deflators were used to convert current dollars to constant dollars.

As a result of a new sample design, statistics for 1988-91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-2. Summary data for R&amp;D-performing companies, by detailed industry and size of company: 1994-95

Page 1 of:

Industry and size of company	SIC code	Research and development funds						Domestic net sales		R&D scientists and engineers		Domestic employment	
		Total		Federal		Company				January 3/	March		
		1994	1995	1994	1995	1994	1995	1994	1995	1995	1996	1994	1995
		[Dollars in millions]						[In thousands]					
All Industries.....		\$119,595	\$132,103	\$22,463	\$23,451	\$97,131	\$108,652	\$3,595,278	\$3,921,561	749.2	832.8	17,443	17,759
Distribution by industry:													
Manufacturing.....		90,749	100,067	17,373	18,831	73,375	81,236	2,523,767	2,756,605	540.7	606.2	11,678	11,220
Food and kindred products.....	20	(D)	(D)	0	0	(D)	(D)	286,050	(D)	(D)	(D)	1,058	(D)
Tobacco products.....	21	(D)	(D)	0	0	(D)	(D)	16,478	(D)	(D)	(D)	47	(D)
Textile mill products.....	22	(D)	(D)	(D)	(D)	242	276	39,611	29,625	2.2	2.2	349	281
Apparel.....	23	(D)	(D)	(D)	(D)	74	106	10,673	12,852	0.9	1.6	97	107
Lumber and wood products, except furniture.....	24	46	(D)	0	(D)	48	84	12,740	12,056	0.5	0.7	84	74
Furniture and fixtures.....	25	(D)	(D)	(D)	(D)	155	145	19,454	19,913	1.8	2.2 (S)	253	160
Paper and allied products.....	26	(D)	(D)	(D)	(D)	1,263	1,404	130,358	138,086	10.6	11.0 (S)	696	547
Printing, publishing, and allied industries.....	27	318	(D)	0	(D)	318	306	48,022	39,781	3.5	3.3 (S)	367	341
Chemicals and allied products....	28	(D)	17,547	(D)	210 (S)	16,559	17,337	322,039	371,302	91.5	94.3	1,225	1,211
Petroleum refining and extraction.....	13,29	1,950	1,760	10	6	1,939	1,754	235,280	245,662	9.0	8.4	376	324
Rubber products.....	30	(D)	(D)	(D)	(D)	1,432	1,210	62,223	76,816	8.8	10.2	456	485
Leather and leather products.....	31	40	(D)	0	(D)	40	40	7,089	6,534	0.3	0.3	46	37
Stone, clay, and glass products..	32	591	448	38	6	553	441	35,778	30,363	4.3	3.9	221	173
Primary metals.....	33	690	593	17	13	672	580	116,624	115,664	6.7	4.1	482	465
Fabricated metal products.....	34	1,111	1,023	243	86	868	937	91,075	89,012	9.5	9.1	612	593
Machinery.....	35	8,110	(D)	99	(D)	8,011	9,676	210,835	269,689	66.3	87.3	1,143	1,172
Electrical equipment.....	36	15,338	18,751	1,801	1,690	13,537	17,060	259,693	315,070	105.5	125.8	1,433	1,384
Transportation.....	37	28,087	32,441	10,392	13,130	17,695	19,311	477,508	532,826	115.8	156.6	1,812	2,009
Professional and scientific instruments.....	38	11,441	11,976	3,384	3,460 (S)	8,058	8,516	124,541	116,696	90.6	70.9 (S)	791	710
Miscellaneous manufacturing industries.....	39	(D)	(D)	(D)	(D)	438	488	17,698	20,819	3.9	4.6	131	134

See explanatory information and SOURCE at end of table

Table A-2. Summary data for R&amp;D-performing companies, by detailed industry and size of company: 1994-95

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Industry and size of company	SIC code	Research and development funds						Domestic net sales		R&D scientists and engineers		Domestic employment	
		Total		Federal		Company				January 3/	March		
		1994	1995	1994	1995	1994	1995	1994	1995	1995	1996	1994	1995
		[Dollars in millions]						[In thousands]					
Distribution by industry:													
Nonmanufacturing 1/.....		\$28,846	\$32,036	\$5,090	\$4,620	\$23,756	\$27,415	\$1,071,511	\$1,164,955	208.5	226.6	5,765	6,538
Transportation and utilities.....	40-42,44-49	NA	5,435	NA	252	NA	5,183	NA	460,565	NA	29.3	NA	2,061
Communications.....	48	(D)	(D)	(D)	(D)	4,177	4,756	200,993	220,446	30.1	25.4	884	895
Telephone communications.....	481	NA	(D)	NA	(D)	NA	4,697	NA	218,474	NA	24.7	NA	887
Other communications.....	482-484,489	NA	59	NA	0	NA	59	NA	1,972	NA	0.8	NA	8
Electric, gas, and sanitary services.....	49	403	440	82	93	321	347	187,791	168,314	1.9	3.2 (S)	565	501
Other transportation and utilities.....	40-42,44-47	NA	(D)	NA	(D)	NA	80	NA	71,805	NA	0.7	NA	664
Trade.....	50-59	NA	(D)	NA	(D)	NA	7,514	NA	315,337	NA	47.5	NA	1,869
Finance, insurance, and real estate.....	60-65,67	NA	(D)	NA	(D)	NA	710	NA	105,961	NA	5.6	NA	415
Services.....	701,72,73,75-81,83,84,87,89	NA	17,876	NA	4,270	NA	13,606	NA	230,175	NA	139.6	NA	1,865
Business services.....	73	NA	9,293	NA	612	NA	8,681	NA	91,588	NA	80.2	NA	1,258
Computer and data processing services.....	737	NA	9,059	NA	514	NA	8,545	NA	76,697	NA	77.3	NA	518
Other business services.....	731-736,738	NA	234	NA	98	NA	136	NA	14,891	NA	3.0	NA	740
Health services.....	80	NA	756	NA	4	NA	753	NA	14,480	NA	5.0	NA	140
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	NA	(D)	NA	(D)	NA	737	NA	13,812	NA	4.4	NA	116
Other health services.....	802-805,	NA	(D)	NA	(D)	NA	16 (S)	NA	668	NA	0.6	NA	24

See explanatory information and SOURCE at end of table.

Table A-2. Summary data for R&amp;D-performing companies, by detailed industry and size of company: 1994-95

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Industry and and size of company	SIC code	Research and development funds						Domestic net sales		R&D scientists and engineers		Domestic employment	
		Total		Federal		Company				January 3/	March		
		1994	1995	1994	1995	1994	1995	1994	1995	1995	1996	1994	1995
		[Dollars in millions]						[In thousands]					
Distribution by industry:													
Engineering and management services.....	87	NA	7,662	NA	3,650	NA	4,011	NA	98,178	NA	52.9	NA	324
Engineering, architectural, and surveying.....	871	NA	2,933	NA	1,883	NA	1,050	NA	51,343	NA	22.8 (S)	NA	202
Research, development, and testing.....	873	3,765	(D)	1,470	(D)	1,794	2,829	6,071	39,209	28.0	28.8	45	73
Other engineering and management services...	872,874	NA	(D)	NA	(D)	NA	\$132	NA	\$7,627	NA	1.4	NA	49
Other services.....	701,72,75-79, 81,83,84,89	NA	\$165	NA	\$4	NA	160	NA	25,929	NA	1.5	NA	142
21 Other nonmanufacturing industries 2/.....	07-12,14,15, 161-162,17	NA	413	NA	11	NA	402	NA	52,917	NA	4.6	NA	329
Distribution by size of company: [Number of employees]													
Total.....		\$119,595	132,103	\$22,463	23,451	\$97,131	108,652	\$3,595,278	3,921,561	749.2	832.8	17,443	17,759
Fewer than 500 .....		13,966	16,662	1,164	1,978	12,802	14,684	343,987	374,478	137.5	165.1	2,316	1,935
500 to 999 .....		3,608	4,693	182	225	3,426	4,468	116,833	147,062	30.1	36.6	706	835
1,000 to 4,999.....		14,617	16,960	1,083	798	13,533	16,162	582,384	615,336	110.9	124.4	2,756	2,735
5,000 to 9,999.....		8,912	9,532	825	243	8,087	9,289	400,872	466,186	62.2	61.1	1,748	1,916
10,000 to 24,999.....		15,972	17,071	2,348	1,946 (S)	13,625	15,125	706,139	749,478	91.7	97.0	2,989	2,649
25,000 or more.....		62,519	67,185	16,862	18,261	45,658	48,924	1,445,062	1,569,021	316.8	348.6	6,929	7,689

1/ Until 1995, data were not broken down below this level of detail for most nonmanufacturing industries.

2/ Data for "Other nonmanufacturing industries" in 1994 excluded only SICs 48, 49, 737, 871, 806-807, and 873, which were the only nonmanufacturing industries shown separately.

3/ Data recorded in January represent employment figures for the previous year.

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.

(N/A) = Not available.

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-3. Total (company, Federal, and other) funds for industrial R&amp;D performance, by industry and size of company: 1985-95

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Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	
		[Dollars in millions]											
All Industries.....		\$84,239	\$87,823	\$92,155	\$97,015	\$102,055	\$109,727	\$116,952	\$119,110	\$117,400	\$119,595	\$132,103	
Distribution by industry:													
Manufacturing.....		77,525	80,377	84,311	86,503	88,024	88,934	88,506	90,177	86,569	90,749	100,067	
Food, kindred, and tobacco products.....	20,21	(D)	(D)	1,206	(D)	(D)	(D)	1,277	1,386	1,345	1,476	1,566	
Textiles and apparel.....	22,23	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	
Lumber, wood products, and furniture.....	24,25	147	144	137	(D)	192	216	(D)	(D)	(D)	(D)	(D)	
Paper and allied products.....	26	(D)	(D)	(D)	(D)	879	1,059	(D)	(D)	(D)	(D)	(D)	
Chemicals and allied products.....	28	8,540	8,843	9,635	11,067	12,069	13,291	14,648	15,381	(D)	(D)	17,547	
Industrial chemicals.....	281-82,286	3,498	3,552	3,716	4,172	4,451	5,010	5,390	5,165	(D)	(D)	(D)	
Drugs and medicines.....	283	(D)	3,658	(D)	4,906	(D)	(D)	(D)	7,944	9,146	9,633	10,215	
Other chemicals.....	284-85,287-89	(D)	1,633	(D)	1,989	(D)	(D)	(D)	2,272	(D)	(D)	(D)	
Petroleum refining and extraction.....	13,29	(D)	(D)	1,897	1,997	2,180	2,306	2,498	2,277	2,152	1,950	1,760	
Rubber products.....	30	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	
Stone, clay, and glass products.....	32	(D)	950	995	(D)	(D)	(D)	(D)	(D)	538	591	448	
Primary metals.....	33	(D)	(D)	730	637	686	739	714	522	669	690	593	
Ferrous metals and products.....	331-32,3398-99	(D)	(D)	(D)	253	(D)	(D)	(D)	(D)	289	(D)	(D)	
Nonferrous metals and products.....	333-36	416	458	(D)	384	(D)	(D)	(D)	(D)	380	(D)	(D)	
Fabricated metal products.....	34	829	895	783	881	904	939	974	1,017	1,158	1,111	1,023	
Machinery.....	35	12,216	(D)	(D)	(D)	(D)	14,446	14,775	14,938	8,381	8,110	(D)	
Office, computing, and accounting machines.....	357	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	4,950	4,106	(D)	
Other machinery, except electrical.....	351-56,358-59	(D)	2,396	2,428	2,682	2,729	(D)	(D)	(D)	3,431	4,004	5,041	
Electrical equipment.....	36	14,432	14,980	15,848	14,128	13,318	13,400	13,415	13,360	13,349	15,338	18,751	
Radio and TV receiving equipment.....	365	(D)	133	139	149	96	114	(D)	(D)	(D)	(D)	(D)	
Communication equipment.....	366	9,397	9,669	10,184	8,427	7,071	5,928	4,787	(D)	(D)	(D)	(D)	
Electronic components.....	367	3,385	(D)	4,286	4,133	4,025	3,914	(D)	3,567	5,311	6,032	(D)	
Other electrical equipment.....	361-64,369	(D)	(D)	1,239	1,419	2,126	3,444	(D)	(D)	(D)	(D)	(D)	
Transportation equipment.....	37	(D)	31,275	34,246	34,775	33,859	31,361	27,428	27,494	27,258	28,087	32,441	
Motor vehicles and motor vehicles equipment.....	371	6,984	(D)	(D)	(D)	(D)	(D)	(D)	(D)	11,718	(D)	(D)	
Other transportation equipment.....	373-75,379	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	483	(D)	(D)	
Aircraft and missiles.....	372,376	22,231	21,050	24,458	24,168	22,331	20,635	16,629	17,158	15,056	14,260	16,951	

See explanatory information and SOURCE at end of table.

Table A-3. Total (company, Federal, and other) funds for industrial R&amp;D performance, by industry and size of company: 1985-95

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Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	
		[Dollars in millions]											
Distribution by industry:													
Professional and scientific instruments.....	38	\$5,013	\$5,103	\$5,222	\$5,530	\$5,992	\$7,055	\$8,705	\$9,542	\$10,119	\$11,441	\$11,976	
Scientific and mechanical measuring instruments.....	381-82	(D)	(D)	(D)	1,959	2,366	3,346	(D)	5,156	5,681	6,952	7,146	
Optical, surgical, photographic, and other instruments.....	384-87	(D)	(D)	(D)	3,571	3,626	3,709	(D)	4,386	4,438	4,489	4,831	
Other manufacturing industries .....	27,31,39	(D)	382	(D)	(D)	(D)							
Nonmanufacturing 1/.....		6,714	7,446	7,844	10,513	14,031	20,793	28,446	28,933	30,831	28,846	32,036	
Transportation and utilities.....	40-42,44-49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5,435	
Communications.....	48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	
Telephone communications.....	481	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	
Other communications.....	482-484,489	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	59	
Electric, gas, and sanitary services.....	49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	440	
Other transportation and utilities.....	40-42,44-47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	
23 Trade.....	50-59	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	
Finance, insurance, and real estate.....	60-65,67	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	
Services.....	01,72,73,75-81, 83,84,87,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	17,876	
Business services.....	73	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9,293	
Computer and data processing services.....	737	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9,059	
Other business services.....	731-736,738	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	234	
Health services.....	80	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	756	
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	
Other health services.....	802-805, 808-809	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	

See explanatory information and SOURCE at end of table.

Table A-3. Total (company, Federal, and other) funds for industrial R&amp;D performance, by industry and size of company: 1985-95

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Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	
		[Dollars in millions]											
Distribution by industry:													
Engineering and management services...	87	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	\$7,662
Engineering, architectural, and surveying.....	871	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,933
Research, development, and testing...	873	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)
Other engineering and management services.....	872,874	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)
Other services.....	701,72,75-79, 81,83,84,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	165
Other nonmanufacturing industries .....	07-12,14,15, 161-162,17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	413
Distribution by size of company: [Number of employees]													
Total.....		\$84,239	\$87,823	\$92,155	\$97,015	\$102,055	\$109,727	\$116,952	\$119,110	\$117,400	\$119,595	132,103	
Fewer than 500.....		5,866	7,071	7,163	(S)	7,809	(S)	13,172	13,557	14,620	13,966	16,662	
500 to 999.....		1,648	1,902	1,725	1,669	1,825	2,154	8,000	7,958	3,230	3,608	4,693	
1,000 to 4,999.....		6,240	7,472	7,262	7,622	7,881	8,411	10,453	11,886	13,334	14,617	16,960	
5,000 to 9,999.....		4,022	4,251	4,501	5,245	5,756	6,746	8,049	8,258	9,135	8,912	9,532	
10,000 to 24,999.....		11,109	10,493	12,043	11,506	10,450	12,486	15,770	15,744	15,421	15,972	17,071	
25,000 or more.....		55,354	56,991	59,461	63,694	68,335	71,030	61,508	61,707	61,659	62,519	67,185	

1/ Until 1995, data were not broken down below this level of detail for most nonmanufacturing industries.

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.

NA = Not available.

NOTE: As a result of a new sample design, statistics for 1988-91 have been revised since originally published. These statistics now better reflect R&amp;D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-4. Total (company, Federal, and other) funds for industrial R&amp;D performance, by industry and size of company: 1995

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Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[Dollars in millions]					
All Industries.....		\$132,103	\$16,662	\$4,693	\$16,960	\$9,532	\$17,071	\$67,185
Manufacturing.....		100,067	7,418	2,917	13,177	7,170	14,042	55,343
Food, kindred, and tobacco products.....	20,21	1,566	194	38	162	251	217	704
Textiles and apparel.....	22,23	(D)	55	42	176	13	79	(D)
Lumber, wood products, and furniture.....	24,25	(D)	40	13	74	72	(D)	(D)
Paper and allied products.....	26	(D)	28	24	139	57	171	(D)
Chemicals and allied products.....	28	17,547	638	288	3,760	1,434	5,869	5,558
Industrial chemicals.....	281-82,286	(D)	156	130	992	427	(D)	(D)
Drugs and medicines.....	283	10,215	248	(D)	2,290	(D)	3,679	3,231
Other chemicals.....	284-85,287-89	(D)	234	(D)	477	(D)	(D)	(D)
Petroleum refining and extraction.....	13,29	1,760	18	(D)	91	(D)	783	851
Rubber products.....	30	(D)	198	163	323	105	217	(D)
Stone, clay, and glass products.....	32	448	45	31	75	77	219	0
Primary metals.....	33	593	46	(D)	157	90	97	(D)
Ferrous metals and products.....	331-32,3398-99	(D)	10	(D)	61	(D)	(D)	(D)
Nonferrous metals and products.....	333-36	(D)	36	22	96	(D)	(D)	(D)
Fabricated metal products.....	34	1,023	199	77	234	166	348	0
Machinery.....	35	(D)	1,496	(D)	2,483	1,956	1,709	1,487
Office, computing, and accounting machines.....	357	(D)	385	(D)	1,491	1,307	(D)	(D)
Other machinery, except electrical.....	351-56,358-59	5,041	1,110	401	992	649	(D)	(D)
Electrical equipment.....	36	18,751	2,295	900	2,809	1,390	2,844	8,512
Radio and TV receiving equipment.....	365	(D)	29	(D)	78	0	0	0
Communication equipment.....	366	(D)	628	373	916	(D)	(D)	(D)
Electronic components.....	367	(D)	1,022	428	1,317	942	(D)	(D)
Other electrical equipment.....	361-64,369	(D)	616	(D)	498	(D)	251	2,407

See explanatory information and SOURCE at end of table.

Table A-4. Total (company, Federal, and other) funds for industrial R&amp;D performance, by industry and size of company: 1995

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Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[Dollars in millions]					
Transportation equipment.....	37	\$32,441	\$86	\$79 (S)	\$608	\$526	\$719	\$30,424
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	21	208	281	212	(D)
Other transportation equipment.....	373-75,379	(D)	(D)	(D)	86	0	(D)	(D)
Aircraft and missiles.....	372,376	16,951	15	(D)	314	245	(D)	16,042
Professional and scientific instruments.....	38	11,976	1,926	(D)	1,914	801	(D)	6,231
Scientific and mechanical measuring instruments.....	381-82	7,146	1,153	315	1,046	(D)	(D)	(D)
Optical, surgical, photographic, and other instruments.....	384-87	4,831	773	(D)	868	(D)	(D)	(D)
Other manufacturing industries .....	27,31,39	(D)	154	(D)	172	225	217	38
Nonmanufacturing.....		32,036	9,244	1,777	3,782	2,361	3,030	11,842
26								
Transportation and utilities.....	40-42,44-49	5,435	112	(D)	162	58	(D)	4,927
Communications.....	48	(D)	37	(D)	53	(D)	0	4,793
Telephone communications.....	481	(D)	(D)	0	(D)	(D)	0	4,793
Other communications.....	482-484,489	59	(D)	(D)	(D)	0	0	0
Electric, gas, and sanitary services.....	49	440	(D)	0	82	42	166	(D)
Other transportation and utilities.....	40-42,44-47	(D)	(D)	0	27	(D)	(D)	(D)
Trade.....	50-59	(D)	959	168	945	359	(D)	5,034
Finance, insurance, and real estate.....	60-65,67	(D)	46	129	92	235	(D)	102
Services.....	701,72,73,75-81, 83,84,87,89	17,876	8,058	(D)	2,514	1,663	2,616	(D)
Business services.....	73	9,293	3,320	1,020	2,232	1,462	(D)	(D)
Computer and data processing services.....	737	9,059	3,187	(D)	2,180	(D)	(D)	(D)
Other business services.....	731-736,738	234	133	(D)	52	(D)	(D)	8

See explanatory information and SOURCE at end of table.

Table A-4. Total (company, Federal, and other) funds for industrial R&amp;D performance, by industry and size of company: 1995

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Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[Dollars in millions]					
Health services.....	80	\$756	\$184	(D)	\$16	\$0	(D)	(D)
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	(D)	175	(D)	8	0	(D)	(D)
Other health services.....	802-805,808-809	(D)	8	\$0	9	0	(D)	\$0
Engineering and management services...	87	7,662	4,514	352	227	(D)	(D)	(D)
Engineering, architectural, and surveying.....	871	2,933	1,229	(D)	102	(D)	(D)	(D)
Research, development, and testing...	873	(D)	3,166	283	(D)	0	(D)	0
Other engineering and management services.....	872,874	(D)	119	(D)	(D)	(D)	(D)	0
Other services.....	701,72,75-79,81, 83,84,89	165	41	8	38	(D)	(D)	(D)
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	413	68	87	71	46	(D)	(D)

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-5. Total (company, Federal, and other) funds for industrial R&amp;D performance, by industry, size of company, and size of R&amp;D program: 1995

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Industry and size of company	SIC code	Total	Size of R&D program				
			Less than \$200,000	\$200,000 to \$999,999	\$ 1 million to \$9,999 million	\$ 10 million to \$99,999 million	\$100 million or more
			[Dollars in millions]				
All Industries.....		\$132,103	\$981	\$4,111	\$12,280	\$23,959	\$90,772
Distribution by industry:							
Manufacturing.....		100,067	608	1,935	7,473	15,845	74,207
Food, kindred, and tobacco products.....	20,21	1,566	(D)	194	174	743	(D)
Textiles and apparel.....	22,23	(D)	37	(D)	123	197	0
Lumber, wood products, and furniture.....	24,25	(D)	(D)	24	81	109	0
Paper and allied products.....	26	(D)	16	15	173	395	(D)
Chemicals and allied products.....	28	17,547	60	183	613	2,802	13,888
Industrial chemicals.....	281-82,286	(D)	(D)	40	245	995	4,040
Drugs and medicines.....	283	10,215	10	31	171	1,101	8,902
Other chemicals.....	284-85,287-89	(D)	(D)	113	198	706	947
Petroleum refining and extraction.....	13,29	1,760	(D)	(D)	57	366	1,326
Rubber products.....	30	(D)	25	139	315	472	(D)
Stone, clay, and glass products.....	32	448	12	28	60	348	0
Primary metals.....	33	593	(D)	28	189	236	(D)
Ferrous metals and products.....	331-32,3398-99	(D)	(D)	12	85	122	0
Nonferrous metals and products.....	333-36	(D)	4	16	104	114	(D)
Fabricated metal products.....	34	1,023	50	125	312	536	0
Machinery.....	35	(D)	(D)	278	1,491	2,821	5,035
Office, computing, and accounting machines.....	357	(D)	(D)	55	308	797	3,552
Other machinery, except electrical.....	351-56,35-59	5,041	128	223	1,183	2,024	1,483
Electrical equipment.....	36	18,751	89	308	1,887	3,256	13,211
Radio and TV receiving equipment.....	365	(D)	4	9	45	(D)	0
Communication equipment.....	366	(D)	(D)	64	523	1,006	2,768
Electronic components.....	367	(D)	(D)	69	701	1,589	7,837
Other electrical equipment.....	361-64,369	(D)	37	167	617	(D)	2,606

See explanatory information and SOURCE at end of table.

Table A-5. Total (company, Federal, and other) funds for industrial R&amp;D performance, by industry, size of company, and size of R&amp;D program: 1995

Page 2 of 3

Industry and size of company	SIC code	Total	Size of R&D program				
			Less than \$200,000	\$200,000 to \$999,999	\$ 1 million to \$9,999 million	\$ 10 million to \$99,999 million	\$100 million or more
			[Dollars in millions]				
Distribution by industry:							
Transportation equipment.....	37	\$32,441	\$18	\$45	\$205	\$912	\$31,262
Motor vehicles and motor vehicles equipment.....	371	(D)	12	(D)	162	485	(D)
Other transportation equipment.....	373-75,379	(D)	(D)	0	25 (S)	133	(D)
Aircraft and missiles.....	372,376	16,951	(D)	(D)	17	294	16,630
Professional and scientific instruments.....	38	11,976	93	450	1,553	2,175	7,707
Scientific and mechanical measuring instruments.....	381-82	7,146	65	349	725	972	5,035
Optical, surgical, photographic, and other instruments.....	384-87	4,831	28	101	828	1,203	2,672
Other manufacturing industries.....	27,31,39	(D)	(D)	83	242	478	0
Nonmanufacturing.....		32,036	373	2,176	4,807	8,114	16,565
29 Transportation and utilities.....	40-42,44-49	5,435	1	26	302	505	4,602
Communications.....	48	(D)	(D)	(D)	63	223	4,602
Telephone communications.....	481	(D)	(D)	0	46	(D)	4,602
Other communications.....	482-484,489	59	(D)	(D)	17	(D)	0
Electric, gas, and sanitary services.....	49	440	0	11	203	226	0
Other transportation and utilities.....	40-42,44-47	(D)	(D)	(D)	35	56	0
Trade.....	50-59	(D)	120	528	352	1,491	(D)
Finance, insurance, and real estate.....	60-65,67	(D)	5	68	157	269	(D)
Services.....	701,72,73,75-81, 83,84,87,89	17,876	194	1,469	3,940	5,632	6,641
Business services.....	73	9,293	112	670	2,028	3,019	3,464
Computer and data processing services.....	737	9,059	82	646	1,896	2,970	3,464
Other business services.....	731-736,738	234	30	24	132	49	0

See explanatory information and SOURCE at end of table.

Table A-5. Total (company, Federal, and other) funds for industrial R&amp;D performance, by industry, size of company, and size of R&amp;D program: 1995

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Industry and size of company	SIC code	Total	Size of R&D program				
			Less than \$200,000	\$200,000 to \$999,999	\$ 1 million to \$9,999 million	\$ 10 million to \$99,999 million	\$100 million or more
			[Dollars in millions]				
Distribution by industry:							
Health services.....	80	\$756	\$24	\$113	\$55	(D)	(D)
Offices and clinics of medical doctors, hospitals, medical and dental labs....	801,806,807	(D)	(D)	109	46	(D)	(D)
Other health services.....	802-805,808-809	(D)	(D)	4	9	\$0	\$0
Engineering and management services.....	87	7,662	(D)	679	1,802	2,407	(D)
Engineering, architectural and surveying.....	871	2,933	40	(D)	619	579	(D)
Research, development, and testing.....	873	(D)	7	307	1,162	1,828	(D)
Other engineering and management services.....	872,874	(D)	(D)	(D)	21	0	0
Other services.....	701,72,75-79, 81,83,84,89	165	(D)	7	54	(D)	0
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	413	53	86	57	217	0
Distribution by size of company: [Number of employees]							
Total.....		132,103	981	4,111	12,280	23,959	90,772
Fewer than 500.....		16,662	(D)	3,695	8,022	3,863	(D)
500 to 999.....		4,693	(D)	247	1,461	2,828	(D)
1,000 to 4,999.....		16,960	2	137	2,194	9,099	5,527
5,000 to 9,999.....		9,532	3	21	304	3,387	5,817
10,000 to 24,999.....		17,071	(D)	(D)	193	3,232	13,641
25,000 or more.....		67,185	(D)	(D)	107	1,550	65,523

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

**NOTE:** As a result of a new sample design, statistics for 1988-91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-6. Number of R&amp;D-performing companies, by industry, size of company, and size of R&amp;D program: 1995

Page 1 of 3

Industry	SIC code	Total	Size of R&D program				
			Less than \$200,000	\$200,000 to \$999,999	\$ 1 million to \$9,999 million	\$ 10 million to \$99,999 million	\$100 million or more
			[Number of companies]				
All Industries.....		33,314	18,378	9,852	4,081	851	152
Distribution by industry:							
Manufacturing.....		17,537	10,015	4,387	2,466	544	125
Food, kindred, and tobacco products.....	20,21	780	323	376	52	27	2
Textiles and apparel.....	22,23	623	514	55	44	10	0
Lumber, wood products, and furniture.....	24,25	690	593	53	38	7	0
Paper and allied products.....	26	239	148	30	45	14	2
Chemicals and allied products.....	28	1,600	827	500	160	78	35
Industrial chemicals.....	281-82,286	386	186	103	58	26	13
Drugs and medicines.....	283	339	159	88	48	25	19
Other chemicals.....	284-85,287-89	875	482	309	55	27	3
Petroleum refining and extraction.....	13,29	54	1	25	12	10	6
Rubber products.....	30	920	367	418	117	16	2
31 Stone, clay, and glass products.....	32	399	293	65	31	10	0
Primary metals.....	33	258	128	59	58	12	1
Ferrous metals and products.....	331-32,3398-99	73	23	22	21	7	0
Nonferrous metals and products.....	333-36	185	104	37	37	5	1
Fabricated metal products.....	34	1,392	979	285	110	17	0
Machinery.....	35	3,937	2,599	746	476	97	19
Office, computing, and accounting machines.....	357	426	133	179	73	28	14
Other machinery, except electrical.....	351-56,358-59	3,511	2,467	567	403	69	5
Electrical equipment.....	36	2,475	1,143	584	599	122	27
Radio and TV receiving equipment.....	365	84	52	14	16	2	0
Communication equipment.....	366	466	81	132	209	36	8
Electronic components.....	367	893	498	126	199	58	12
Other electrical equipment.....	361-64,369	1,032	512	311	176	26	7

See explanatory information and SOURCE at end of table.

Table A-6. Number of R&amp;D-performing companies, by industry, size of company, and size of R&amp;D program: 1995

Page 2 of 3

Industry	SIC code	Total	Size of R&D program				
			Less than \$200,000	\$200,000 to \$999,999	\$ 1 million to \$9,999 million	\$ 10 million to \$99,999 million	\$100 million or more
			[Number of companies]				
Distribution by industry:							
Transportation equipment.....	37	599	327	135	87	33	18
Motor vehicles and motor vehicles equipment.....	371	483	275	115	73	16	4
Other transportation equipment.....	373-75,379	31	13	0	10 (S)	6	2
Aircraft and missiles.....	372,376	85	39	19	4	11	12
Professional and scientific instruments.....	38	2,663	1,148	870	556	76	13
Scientific and mechanical measuring instruments.....	381-82	1,731	742	707	236	38	8
Optical, surgical, photographic, and other instruments.....	384-87	933	407	163	321	38	5
Other manufacturing industries.....	27,31,39	908	625	187	81	15	0
Nonmanufacturing.....		15,777	8,363	5,465	1,615	307	27
Transportation and utilities.....	40-42,44-49	249	27	48	151	19	4
Communications.....	48	99	26	26	35	8	4
Telephone communications.....	481	63	25	0	27	6	4
Other communications.....	482-484,489	37	1	26	8	2	0
Electric, gas, and sanitary services.....	49	132	0	20	105	7	0
Other transportation and utilities.....	40-42,44-47	18	1	2	11	4	0
Trade.....	50-59	5,727	3,951	1,623	106	43	5
Finance, insurance, and real estate.....	60-65,67	169	28	87	42	10	2
Services.....	701,72,73,75-81, 83,84,87,89	8,286	3,304	3,439	1,298	229	16
Business services.....	73	4,266	1,530	1,867	744	114	10
Computer and data processing services.....	737	3,557	908	1,804	724	111	10
Other business services.....	731-736,738	709	622	63	21	3	0

See explanatory information and SOURCE at end of table.

Table A-6. Number of R&amp;D-performing companies, by industry, size of company, and size of R&amp;D program: 1995

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Industry	SIC code	Total	Size of R&D program				
			Less than \$200,000	\$200,000 to \$999,999	\$ 1 million to \$9,999 million	\$ 10 million to \$99,999 million	\$100 million or more
			[Number of companies]				
Distribution by industry:							
Health services.....	80	1,055	774	258	20	2	1
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	745	473	252	17	2	1
Other health services.....	802-805,808-809	310	301	6	3	0	0
Engineering and management services.....	87	2,666	738	1,296	517	110	5
Engineering, architectural, and surveying.....	871	1,052	443	378	209	20	2
Research, development, and testing.....	873	1,333	272	668	301	90	3
Other engineering and management services.....	872,874	281	24	250	7	0	0
Other services.....	701,72,75-79,81, 83,84,89	300	262	18	17	3	0
3 Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	1,344	1,053	267	18	6	0
Distribution by size of company: [Number of employees]							
Total.....		33,314	18,378	9,852	4,081	851	152
Fewer than 500.....		30,284	18,198	8,977	2,894	214	1
500 to 999.....		1,235	127	568	431	109	1
1,000 to 4,999.....		1,217	27	254	612	293	31
5,000 to 9,999.....		274	23	33	82	111	25
10,000 to 24,999.....		172	3	11	41	82	35
25,000 or more.....		131	1	8	21	42	59

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-7. Company and other (except Federal) funds for industrial R&amp;D performance, by industry and size of company: 1985-95

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Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	
		[Dollars in millions]											
All Industries.....		\$57,043	\$59,932	\$61,403	\$66,672	\$73,501	\$81,602	\$90,580	\$94,388	\$94,591	\$97,131	\$108,652	
Distribution by industry:													
Manufacturing.....		52,642	55,192	56,259	59,415	63,199	65,251	67,639	71,025	69,901	73,375	81,236	
Food, kindred, and tobacco products.....	20,21	1,136	1,280	1,204	1,173	1,244	1,248	1,277	1,386	1,345	1,476	1,566	
Textiles and apparel.....	22,23	218	246	243	215	(S)	260	236	261	286	316	381	
Lumber, wood products, and furniture.....	24,25	147	144	137	165	192	216	200	234	196	201	229	
Paper and allied products.....	26	576	538	604	752	879	1,059	1,174	1,182	1,191	1,263	1,404	
Chemicals and allied products.....	28	8,310	8,664	9,445	10,828	11,943	13,168	14,439	15,091	16,658	16,559	17,337	
Industrial chemicals.....	281-82,286	3,281	3,374	3,531	3,939	4,340	4,902	5,225	4,911	5,165	4,780	5,139	
Drugs and medicines.....	283	3,481	3,657	4,095	4,900	5,512	5,917	6,947	7,934	9,132	9,625	10,202	
Other chemicals.....	284-85,287-89	1,548	1,633	1,819	1,989	2,091	2,349	2,267	2,246	2,361	2,154	1,996	
Petroleum refining and extraction.....	13,29	2,194	1,971	1,883	1,975	2,162	2,289	2,487	2,268	2,138	1,939	1,754	
Rubber products.....	30	659	655	596	718	867	1,056	(D)	1,256	1,059	1,432	1,210	
Stone, clay, and glass products.....	32	825	941	985	697	615	538	455	479	529	553	441	
Primary metals.....	33	730	786	711	620	666	717	706	514	646	672	580	
Ferrous metals and products.....	331-32,3398-99	323	336	249	252	244	231	225	221	272	241	217	
Nonferrous metals and products.....	333-36	407	450	462	368	422	486	481	293	374	431	363	
Fabricated metal products.....	34	780	800	633	718	726	736	748	723	936	868	937	
Machinery.....	35	10,721	10,701	10,577	11,929	13,342	13,575	13,720	13,903	8,295	8,011	9,676	
Office, computing, and accounting machines.....	357	8,418	8,380	8,193	9,347	10,725	10,988	10,419	10,614	4,917	4,078	4,699	
Other machinery, except electrical.....	351-56,358-59	2,303	2,321	2,384	2,582	2,618	2,587	3,301	3,289	3,378	3,933	4,976	
Electrical equipment.....	36	9,271	9,767	10,449	9,975	9,575	9,267	8,865	9,516	11,682	13,537	17,060	
Radio and TV receiving equipment.....	365	350	133	139	149	96	114	(D)	93	87	64	114	
Communication equipment.....	366	5,174	5,117	5,455	4,798	4,159	3,584	(S)	3,381	3,954	4,939	3,845	
Electronic components.....	367	2,826	3,357	3,630	3,684	3,655	3,496	3,177	3,320	5,105	5,870	9,628	
Other electrical equipment.....	361-64,369	921	1,160	1,225	1,345	1,664	2,073	(D)	2,722	2,537	2,664	3,473	
Transportation equipment.....	37	12,092	13,567	13,462	13,910	14,596	14,264	14,858	16,292	16,640	17,695	19,311	
Motor vehicles and motor vehicles equipment.....	371	6,164	7,171	7,167	7,783	8,756	8,594	9,063	9,132	10,659	11,950	13,590	
Other transportation equipment.....	373-75,379	279	330	356	361	337	283	262	289	297	279	232	
Aircraft and missiles.....	372,376	5,649	6,066	5,939	5,766	5,503	5,387	5,533	6,871	5,684	5,466	5,489	

See explanatory information and SOURCE at end of table.

Table A-7. Company and other (except Federal) funds for industrial R&amp;D performance, by industry and size of company: 1985-95

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Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	
		[Dollars in millions]											
Distribution by industry:													
Professional and scientific instruments.....	38	\$4,622	\$4,752	\$4,950	\$5,339	\$5,729	\$6,318	\$6,840	\$7,321	\$7,542	\$8,058	\$8,516	
Scientific and mechanical measuring instruments.....	381-82	1,596	1,521	1,598	1,863	2,205	2,696	3,017	3,013	3,196	3,687	3,787	
Optical, surgical, photographic, and other instruments.....	384-87	3,026	3,231	3,352	3,476	3,524	3,621	3,823	4,308	4,346	4,371	4,729	
Other manufacturing industries .....	27,31,39	361	380	380	401	438	541	(D)	599	758	796	835	
Nonmanufacturing 1/.....		4,401	4,740	5,144	7,257	10,302	16,351	22,941	23,363	24,690	23,756	27,415	
Transportation and utilities.....	40-42,44-49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5,183	
Communications.....	48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,756	
Telephone communications.....	481	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,697	
Other communications.....	482-484,489	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	59	
Electric, gas, and sanitary services.....	49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	347	
Other transportation and utilities.....	40-42,44-47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	
Trade.....	50-59	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7,514	
Finance, insurance, and real estate.....	60-65,67	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	710	
Services.....	701,72,73,75-81, 83,84,87,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	13,606	
Business services.....	73	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8,681	
Computer and data processing services.....	737	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8,545	
Other business services.....	731-736,738	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	136	
Health services.....	80	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	753	
Offices and clinics of medical doctors, hospitals, medical and dental labs....	801,806,807	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	737	
Other health services.....	802-805,808-809	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	16	
Engineering and management services.....	87	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,011	
Engineering, architectural, and surveying.....	871	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,050	
Research, development, and testing.....	873	NA	874	NA	875	NA	876	NA	877	NA	878	NA	
Other engineering and management services.....	872,874	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	132	

See explanatory information and SOURCE at end of table.

Table A-7. Company and other (except Federal) funds for industrial R&amp;D performance, by industry and size of company: 1985-95

Page 3 of 3

Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	
		[Dollars in millions]											
Distribution by industry:													
Other services.....	701,72,75-79,81, 83,84,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	\$160
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	402
Distribution by size of company: [Number of employees]													
Total.....		\$57,043	\$59,932	\$61,403	\$66,672	\$73,501	\$81,602	\$90,580	\$94,388	\$94,591	\$97,131	108,652	
Fewer than 500.....		5,127	6,203	6,200	(S)	(S)	(S)	11,285	11,532	13,006	12,802	14,684	
500 to 999.....		1,531	1,765	1,610	1,748	1,934	2,144	7,819	7,807	3,048	3,426	4,468	
1,000 to 4,999.....		5,249	6,243	6,281	6,820	7,546	8,363	9,403	10,865	12,219	13,533	16,162	
5,000 to 9,999.....		3,350	3,455	3,753	4,075	4,509	4,997	7,233	7,495	8,371	8,087	9,289	
10,000 to 24,999.....		8,366	8,489	9,681	10,512	11,631	12,890	12,397	12,328	12,606	13,625	15,125	
25,000 or more.....		33,420	33,777	33,878	36,785	40,703	45,106	42,443	44,361	45,340	45,658	48,924	

1/ Until 1995, data were not broken down below this level of detail for most nonmanufacturing industries.

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.

NA = Not available.

**NOTES:** Company-funded R&D includes funds for industrial R&D performed within company facilities from all sources except the Federal Government. The funds predominantly are the company's own, but also include funds from outside organizations such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments. Company-financed R&D not performed within the company is excluded.

As a result of a new sample design, statistics for 1988-91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-8. Company and other (except Federal) funds for industrial R&amp;D performance, by industry and size of company: 1995

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Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[Dollars in millions]					
All Industries.....		\$108,652	\$14,684	\$4,468	\$16,162	\$9,289	\$15,125	\$48,924
Manufacturing.....		81,236	7,209	2,816	12,669	7,067	13,132	38,342
Food, kindred, and tobacco products.....	20,21	1,566	194	38	162	251	217	704
Textiles and apparel.....	22,23	381	54	42	176	(D)	79	(D)
Lumber, wood products, and furniture.....	24,25	229	37	13	74	72	(D)	(D)
Paper and allied products.....	26	1,404	28	24	139	57	171	985 (S)
Chemicals and allied products.....	28	17,337	620	288	3,749	1,428	5,697	5,554
Industrial chemicals.....	281-82,286	5,139	156	130	984	422	(D)	(D)
Drugs and medicines.....	283	10,202	238	(D)	2,288	(D)	3,678	3,231
Other chemicals.....	284-85,287-89	1,996	226	(D)	477	(D)	(D)	(D)
Petroleum refining and extraction.....	13,29	1,754	18	(D)	91	(D)	779	848
Rubber products.....	30	1,210	198	163	323	(D)	141	(D)
Stone, clay, and glass products.....	32	441	44	30	70	77	219	0
Primary metals.....	33	580	45	(D)	156	86	97	(D)
Ferrous metals and products.....	331-32,3398-99	217	10	(D)	61	(D)	(D)	(D)
Nonferrous metals and products.....	333-36	363	35	22	95	(D)	(D)	(D)
Fabricated metal products.....	34	937	193	76	234	132	302	0
Machinery.....	35	9,676	1,485	630	2,477	1,950	1,670	1,465
Office, computing, and accounting machines.....	357	4,699	378	230	1,486	1,302	(D)	(D)
Other machinery, except electrical.....	351-56,358-59	4,976	1,106	400	991	647	(D)	(D)
Electrical equipment.....	36	17,060	2,218	887	2,781	1,381	2,844	6,949
Radio and TV receiving equipment.....	365	114	29	10	75	0	0	0
Communication equipment.....	366	3,845	582	370	913	(D)	(D)	(D)
Electronic components.....	367	9,628	994	418	1,296	(D)	(D)	(D)
Other electrical equipment.....	361-64,369	3,473	612	88	498	168	251	1,856
Transportation equipment.....	37	19,311	81	62 (S)	516	500	307	17,845
Motor vehicles and motor vehicles equipment.....	371	13,590	(D)	21	208	281	212	(D)

See explanatory information and SOURCE at end of table.

Table A-8. Company and other (except Federal) funds for industrial R&amp;D performance, by industry and size of company: 1995

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Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[Dollars in millions]					
Other transportation equipment.....	373-75,379	\$232	(D)	(D)	\$86	\$0	(D)	(D)
Aircraft and missiles.....	372,376	5,489	\$10	(D)	221	219	(D)	\$4,953
Professional and scientific instruments.....	38	8,516	1,841	\$498	1,551	(D)	(D)	3,452
Scientific and mechanical measuring instruments.....	381-82	3,787	1,082	255	683	(D)	(D)	(D)
Optical, surgical, photographic, and other instruments.....	384-87	4,729	759	244	868	621	(D)	(D)
Other manufacturing industries .....	27,31,39	835	154	30	172	225	\$216	38
Nonmanufacturing .....		27,415	7,475	1,652	3,492	2,222	1,993	10,581
Transportation and utilities.....	40-42,44-49	5,183	(D)	(D)	131	58	149	4,726
Communications.....	48	4,756	(D)	(D)	53	(D)	0	4,647
Telephone communications.....	481	4,697	(D)	0	(D)	(D)	0	4,647
Other communications.....	482-484,489	59	36	(D)	(D)	0	0	0
Electric, gas, and sanitary services.....	49	347	(D)	0	64	42	(D)	(D)
Other transportation and utilities.....	40-42,44-47	80	(D)	0	14	(D)	(D)	(D)
Trade.....	50-59	7,514	959	(D)	945	359	(D)	4,959
Finance, insurance, and real estate.....	60-65,67	710	46	117	92	235	(D)	(D)
Services.....	701,72,73,75-81, 83,84,87,89	13,606	6,295	1,274	2,254	1,529	1,599	655
Business services.....	73	8,681	2,812	998	2,151	1,462	(D)	(D)
Computer and data processing services.....	737	8,545	2,769	977	2,099	(D)	(D)	(D)
Other business services.....	731-736,738	136	43	21 (S)	52	(D)	(D)	8
Health services.....	80	753	182	(D)	16	0	(D)	(D)
Offices and clinics of medical doctors, hospital, medical and dental labs....	801,806,807	737	(D)	(D)	8	0	(D)	(D)
Other health services.....	802-805,808-809	16 (S)	(D)	0	8	0	(D)	0

See explanatory information and SOURCE at end of table.

Table A-8. Company and other (except Federal) funds for industrial R&amp;D performance, by industry and size of company: 1995

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Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[Dollars in millions]					
Engineering and management services.....	87	\$4,011	\$3,264	\$261	\$49	(D)	(D)	(D)
Engineering, architectural, and surveying.....	871	1,050	596	36	30	(D)	(D)	(D)
Research, development, and testing.....	873	2,829	2,550	(D)	(D)	\$0	(D)	\$0
Other engineering and management services.....	872,874	132	117	(D)	(D)	(D)	(D)	0
Other services.....	701,72,75–79,81, 83,84,89	160	37	(D)	38	(D)	(D)	(D)
Other nonmanufacturing industries.....	07–12,14,15, 161–162,17	402	(D)	87	71	42	\$2	(D)

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

69 SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

**Table A-9. Company-financed R&D contracted to outside organizations,  
by industry and size of company: 1991, 1993, 1994, and 1995**

Page 1 of 2

Industry and size of company	SIC code	1991	1993	1994	1995
		[Dollars in millions]			
All Industries.....	.....	\$3,319	\$3,462	\$3,618	\$5,177
<b>Distribution by industry:</b>					
Manufacturing.....	.....	2,577	2,339	2,450	3,812
Food, kindred, and tobacco products.....	20,21	44	43	43	41
Textiles and apparel.....	22,23	(D)	2	4	1
Lumber, wood products, and furniture.....	24,25	(D)	8	8	7
Paper and allied products.....	26	12	5	4	14
Chemicals and allied products.....	28	1,087	1,117	1,239	2,386
Industrial chemicals.....	281-82,286	95	43	38	259
Drugs and medicines.....	283	771	942	1,055	1,751
Other chemicals.....	284-85,287-89	221	132	146	376
Petroleum refining and extraction.....	13,29	35	56	52	32
Rubber products.....	30	18	65	22	32
Stone, clay, and glass products.....	32	(D)	2	6	2
Primary metals.....	33	24	12	15	13
Ferrous metals and products.....	331-32,3398-99	4	8	10	5
Nonferrous metals and products.....	333-36	20	4	5	8
Fabricated metal products.....	34	3	21	21	10
Machinery.....	35	256	125	200	201
Office, computing, and accounting machines.....	357	229	52	113	84
Other machinery, except electrical.....	351-56,358-59	27	73	87	117
Electrical equipment.....	36	114	143	116	194
Radio and TV receiving equipment.....	365	0	(D)	1	2
Communication equipment.....	366	63	20	38	40
Electronic components.....	367	38	24	24	75
Other electrical equipment.....	361-64,369	13	(D)	54	77
Transportation equipment.....	37	687	(D)	591	(D)
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	(D)	(D)
Other transportation equipment.....	373-75,379	(S)	(D)	(D)	5
Aircraft and missiles.....	372,376	(D)	52	83	72
Professional and scientific instruments.....	38	(D)	189	57	114
Scientific and mechanical measuring instruments.....	381-82	4	25	16	45
Optical, surgical, photographic, and other instruments.....	384-87	(D)	163	40	68
Other manufacturing industries.....	27,31,39	2	(D)	72	(D)
Nonmanufacturing 1/.....	.....	742	1,123	1,168	1,365
Transportation and utilities.....	40-42,44-49	NA	NA	NA	509
Communications.....	48	NA	NA	NA	264
Telephone communications.....	481	NA	NA	NA	(D)
Other communications.....	482-484,489	NA	NA	NA	(D)
Electric, gas, and sanitary services.....	49	NA	NA	NA	219
Other transportation and utilities.....	40-42,44-47	NA	NA	NA	27

See explanatory information and SOURCE at end of table.

**Table A-9. Company-financed R&D contracted to outside organizations,  
by industry and size of company: 1991, 1993, 1994, and 1995**

Page 2 of 2

Industry and size of company	SIC code	1991	1993	1994	1995
		[Dollars in millions]			
<b>Distribution by industry:</b>					
Trade.....	50-59	NA	NA	NA	\$346
Finance, insurance, and real estate.....	60-65,67	NA	NA	NA	92
Services.....	701,72,73,75-81, 83,84,87,89	NA	NA	NA	416
Business services.....	73	NA	NA	NA	151
Computer and data processing services.....	737	NA	NA	NA	139
Other business services.....	731-736,738	NA	NA	NA	12
Health services.....	80	NA	NA	NA	38
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	NA	NA	NA	(D)
Other health services.....	802-805,808-809	NA	NA	NA	(D)
Engineering and management services.....	87	NA	NA	NA	200
Engineering, architectural, and surveying.....	871	NA	NA	NA	13
Research, development, and testing.....	873	NA	NA	NA	187
Other engineering and management services.....	872,874	NA	NA	NA	0
Other services.....	701,72,75-79,81, 83,84,89	NA	NA	NA	27
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	NA	NA	NA	1
<b>Distribution by size of company:</b>					
[Number of employees]					
Total.....		\$3,319	\$3,462	\$3,618	5177
Fewer than 500.....		(S)	751	724	674
500 to 999.....		35	107	126	174
1,000 to 4,999.....		275	310	397	632
5,000 to 9,999.....		218	327	408	393
10,000 to 24,999.....		881	468	391	786
25,000 or more.....		1,762	1,497	1,574	2518

1/ Until 1995, data were not broken down below this level of detail for most nonmanufacturing industries.

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.

NA = Not available.

**NOTE:** As a result of a new sample design, statistics for 1988-91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

**Table A-10. Number of R&D-performing companies contracting R&D performance to outside organizations and total number of R&D-performing companies, by industry and size of company: 1995**

Page 1 of 3

Industry	SIC code	Total		Size of company											
				Fewer than 500 employees		500 to 999 employees		1,000 to 4,999 employees		5,000 to 9,999 employees		10,000 to 24,999 employees		25,000 or more employees	
		Total	Outside	Total	Outside	Total	Outside	Total	Outside	Total	Outside	Total	Outside	Total	Outside
All Industries.....	.....	33,314	5,338	30,284	4,774	1,235	206	1,217	201	274	76	172	40	131	40
Manufacturing.....	.....	17,537	2,545	15,400	2,119	794	176	955	146	179	54	131	28	78	22
Food, kindred, and tobacco product...	20,21	780	24	629	8	45	3	72	3	12	5	12	3	10	2
Textiles and apparel.....	22,23	623	8	527	2	41	2	38	3	6	1	9	0	2	0
Lumber, wood products, and furniture.....	24,25	690	57	610	43	31	10	40	4	7	0	1	0	1	0
Paper and allied products.....	26	239	14	160	0	17	0	41	11	7	1	9	1	6	1
Chemicals and allied products.....	28	1,600	404	1,386	336	59	9	89	22	39	24	19	7	8	6
Industrial chemicals.....	281-82,286	386	15	304	4	36	1	29	6	5	0	9	2	3	2
Drugs and medicines.....	283	339	102	288	81	10	5	26	8	3	1	8	4	4	3
Other chemicals.....	284-85,287-89	875	288	794	251	13	3	34	8	31	23	2	1	1	1
Petroleum refining and extraction.....	13,29	54	11	28	1	1	0	10	3	2	0	9	5	4	2
Rubber products.....	30	920	128	769	98	75	22	61	5	8	1	4	1	2	1
Stone, clay, and glass products.....	32	399	58	344	48	26	6	22	4	3	0	4	0	0	0
Primary metals.....	33	258	116	150	91	36	5	50	10	14	6	5	3	3	1
Ferrous metals and products.....	331-32,3398-99	73	13	17	2	11	0	30	3	12	6	2	1	1	1
Nonferrous metals and products...	333-36	185	102	132	89	25	5	20	7	2	0	3	2	2	0
Fabricated metal products.....	34	1,392	65	1,233	39	68	10	69	10	8	2	14	4	0	0
Machinery.....	35	3,937	231	3,613	172	131	35	150	17	22	4	15	1	6	2
Office, computing, and accounting machines.....	357	426	16	377	10	15	0	25	4	6	1	2	0	1	1
Other machinery, except electrical.....	351-56,358-59	3,511	215	3,236	162	116	35	125	13	16	3	13	1	5	1
Electrical equipment.....	36	2,475	608	2,195	560	111	21	133	20	15	5	9	0	12	2
Radio and TV receiving equipment.....	365	84	36	75	35	3	1	6	0	0	0	0	0	0	0
Communication equipment.....	366	466	109	404	97	32	6	24	5	2	1	2	0	2	0
Electronic components.....	367	893	247	786	233	39	6	56	6	7	1	2	0	3	1
Other electrical equipment.....	361-64,369	1,032	215	930	195	37	7	47	9	6	3	5	0	7	1

See explanatory information and SOURCE at end of table.

**Table A-10. Number of R&D-performing companies contracting R&D performance to outside organizations and total number of R&D-performing companies, by industry and size of company: 1995**

Page 2 of 3

Industry	SIC code	Total		Size of company											
				Fewer than 500 employees		500 to 999 employees		1,000 to 4,999 employees		5,000 to 9,999 employees		10,000 to 24,999 employees		25,000 or more employees	
		Total	Outside	Total	Outside	Total	Outside	Total	Outside	Total	Outside	Total	Outside	Total	Outside
Transportation equipment.....	37	599	120	462	81	35	25	63	9	15	1	9	1	15	3
Motor vehicles and motor vehicles equipment.....	371	483	100	390	69	29	24	46	4	9	1	5	1	4	1
Other transportation equipment....	373-75,379	31	17	14	13	3	1	9	3	0	0	3	0	2	0
Aircraft and missiles.....	372,376	85	4	58	0	3	0	8	2	6	0	1	0	9	2
Professional and scientific instruments.....	38	2,663	598	2,489	564	89	17	68	14	9	2	2	0	6	1
Scientific and mechanical measuring instruments.....	381-82	1,731	305	1,667	295	33	6	23	3	3	0	1	0	4	1
Optical, surgical, photographic, and other instruments.....	384-87	933	293	823	268	56	11	45	11	6	2	1	0	2	0
Other manufacturing industries .....	27,31,39	908	101	805	76	30	11	48	10	11	1	10	2	3	1
Nonmanufacturing .....		15,777	2,793	14,884	2,656	441	29	262	55	95	23	41	12	53	18
Transportation and utilities.....	40-42,44-49	249	63	123	4	2	0	70	29	18	13	15	7	21	10
Communications.....	48	99	10	58	4	2	0	27	0	1	0	0	0	11	6
Telephone communications....	481	63	6	25	0	0	0	25	0	1	0	0	0	11	6
Other communications.....	482-484,489	37	4	32	4	2	0	2	0	0	0	0	0	0	0
Electric, gas, and sanitary services.....	49	132	48	64	0	0	0	38	28	16	12	13	6	2	2
Other transportation and utilities...	40-42,44-47	18	5	2	0	0	0	5	1	1	1	2	1	8	2
Trade.....	50-59	5,727	1,173	5,593	1,155	22	4	52	9	40	1	5	2	15	2
Finance, insurance, and real estate...	60-65,67	169	12	74	1	57	0	15	2	16	5	2	1	5	3
Services.....	701,72,73,75-81,83,84,87,89	8,286	1,535	8,034	1,496	100	20	109	12	17	3	16	2	10	3
Business services.....	73	4,266	902	4,106	876	68	16	68	7	10	3	7	0	7	1
Computer and data processing services.....	737	3,557	588	3,429	570	56	9	57	5	7	3	5	0	3	1
Other business services.....	731-36,738	709	314	677	306	12	7	11	2	3	0	2	0	4	0

See explanatory information and SOURCE at end of table.

**Table A-10. Number of R&D-performing companies contracting R&D performance to outside organizations and total number of R&D-performing companies, by industry and size of company: 1995**

Page 3 of 3

Industry	SIC code	Total		Size of company											
				Fewer than 500 employees		500 to 999 employees		1,000 to 4,999 employees		5,000 to 9,999 employees		10,000 to 24,999 employees		25,000 or more employees	
		Total	Outside	Total	Outside	Total	Outside	Total	Outside	Total	Outside	Total	Outside	Total	Outside
Health services.....	80	1055	193	1036	190	6	0	9	1	0	0	3	1	1	1
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	745	192	730	189	6	0	5	1	0	0	2	1	1	1
Other health services.....	802-805, 808-809	310	1	306	1	0	0	3	0	0	0	1	0	0	0
Engineering and management services.....	87	2666	434	2613	429	22	3	24	3	3	0	3	0	1	0
Engineering, architectural, and surveying.....	871	1052	82	1013	76	15	3	20	3	2	0	1	0	1	0
Research, development, and testing.....	873	1333	352	1324	352	6	0	2	0	0	0	1	0	0	0
Other engineering and management services.....	872,874	281	0	276	0	1	0	2	0	1	0	1	0	0	0
Other services.....	701,72,75-79, 81,83,84,89	300	5	279	1	4	1	8	1	4	0	3	1	1	1
Other nonmanufacturing industries....	07-12,14,15, 161-162,17	1344	9	1059	0	259	5	16	3	5	1	3	0	2	0

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

**Table A-11. Company-financed R&D performed outside the United States by U.S. R&D-performing domestic companies and their foreign subsidiaries, by selected industry: 1985–95**

Page 1 of 1

Industry	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
		[Dollars in millions]										
Total.....		\$3,650	\$4,624	\$5,226	\$6,208	\$6,706	\$7,952	\$9,147	\$10,063	\$9,565	\$9,395	\$13,052
Food, kindred, and tobacco products.....	20,21	75	69	37	27	42	41	66	88	112	117	142
Chemicals and allied products.....	28	843	1,071	1,243	1,548	1,532	2,007	2,401	2,676	2,833	2,456	4,194
Industrial and other chemicals.....	281–2,28–89	444	579	625	855	609	720	1,009	1,045	1,318	917	1,632
Drugs and medicines.....	283	399	492	618	693	923	1,287	1,392	1,631	1,516	1,539	2,562
Petroleum refining and extraction.....	13,29	47	40	47	59	47	76	107	119	104	111	76
Stone, clay, and glass products.....	32	(D)	(D)	(D)	(D)	(D)	59	38	41	38	27	31
Primary metals.....	33	(D)	(D)	18	23	24	26	20	18	12	15	26
Fabricated metal products.....	34	21	26	40	(D)	(D)	95	86	109	119	125	111
Machinery.....	35	689	951	1,233	1,326	1,432	1,451	1,476	1,439	340	308	501
Electrical equipment.....	36	591	(S)	432	591	573	770	651	568	525	495	872
Radio and TV receiving equipment....	365	(D)	(D)	0	(D)	(D)	(D)	2	(D)	(D)	3	(D)
Communication equipment.....	366	(D)	(D)	188	290	199	174	151	(D)	(D)	110	(D)
Electronic components.....	367	117	150	204	246	160	185	164	168	322	276	437
Other electrical equipment.....	361–64,369	24	25	39	(D)	(D)	(D)	334	217	113	107	291
Transportation equipment.....	37	1,025	(D)	(D)	1,750	1,916	2,055	2,402	(D)	(D)	(D)	(D)
Motor vehicles and other transportation equipment.....	371,373–75,379	(D)	(D)	(D)	1,477	1,501	1,901	2,166	(D)	(D)	(D)	(D)
Aircraft and missiles.....	372,376	(D)	182	237	273	415	154	236	493	(D)	251	284
Professional and scientific instruments.....	38	169	212	317	404	474	611	656	685	751	900	988
Other manufacturing industries.....	22–27,30–31,39	125	141	138	178	269	344	467	524	(D)	572	(D)
Nonmanufacturing industries 1/.....	07–10,12–17,40–42, 44–49,50–59,60–65, 67,701,73,75–76,78–79, 80–81,83–84,87,89	18	27	64	146	256	415	778	835	1,770	1,500	2,206

1/ Nonmanufacturing industries for 1990 and prior years included the following SICs only: 10–11, 14–17, 40–42, 44–51, 53–54, 56, 60, 62–63, 72–73, 78, 806–07, and 87.

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

**NOTES:** Data are reported in current U.S. dollars.

As a result of a new sample design, statistics for 1988–91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995



**Table A-12. Company-financed R&D performed outside the United States by U.S. R&D-performing domestic companies and their foreign subsidiaries, by country: 1995**

Location of foreign subsidiary	Number of companies	Total (Dollars in millions)	Page 1 of 1
Total 1/.....	652	\$13,052	
Distributed by country:			
Canada.....	125	383	
Germany.....	110	2,241	
France.....	105	1,121	
Japan.....	79	971	
United Kingdom.....	184	1,034	
Other countries.....	228	781	
Undistributed 2/.....	370	6,521	
Distributed by companies with R&D expenditures in one or more countries:			
Total .....	652	13,052	
One country.....	186	677	
Two countries.....	62	221	
Three countries.....	23	168	
Four countries.....	7	52	
Five countries.....	3	(D)	
More than five countries.....	1	(D)	
Undistributed 2/ 3/.....	370	11,910	

1/ Detail does not add to total because categories are not mutually exclusive.

2/ Includes data reported on form RD-1L that were not allocated to a specific country, and total foreign R&D reported on Form RD-1A. Form RD-1A does not collect data by country.

3/ To avoid double counting, if a company reported ANY foreign R&D expenditures that were not allocated to specific countries, all foreign R&D expenditures, including those that may have been allocated to specific countries, are included in this cell. For example, if a company allocated a portion of its foreign R&D expenditures to Canada and left the remainder unallocated, ALL of its foreign R&D is included in this cell because it could not be determined during processing how many other countries were sites of R&D performance.

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

**NOTE:** Data are reported in current U.S. dollars.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-13. Federal funds for industrial R&amp;D performance, by industry and size of company: 1985-95

Page 1 of 3

Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
		[Dollars in millions]										
All Industries.....		\$27,196	\$27,891	\$30,752	\$30,343	\$28,554	\$28,125	\$26,372	\$24,722	\$22,809	\$22,463	\$23,451
Distribution by industry:												
Manufacturing.....		24,883	25,185	28,052	27,088	24,826	23,683	20,867	19,152	16,669	17,373	18,831
Food, kindred, and tobacco products.....	20,21	(D)	(D)	2	(D)	(D)	(D)	0	0	0	0	0
Textiles and apparel.....	22,23	(D)	(D)	(D)	(D)	(D)	(D)	(S)	(D)	(D)	(D)	(D)
Lumber, wood products, and furniture.....	24,25	0	0	0	(D)	0	0	(D)	(D)	(D)	(D)	(D)
Paper and allied products.....	26	(D)	(D)	(D)	(D)	0	0	(D)	(D)	(D)	(D)	(D)
Chemicals and allied products.....	28	230	179	190	238	126	123	209	(S)	(D)	(D)	210 (S)
Industrial chemicals.....	281-82,286	217	178	185	232	111	109	165	(S)	(D)	(D)	(D)
Drugs and medicines.....	283	(D)	1	(D)	6	(D)	(D)	(D)	(S)	15	8	14
Other chemicals.....	284-85,287-89	(D)	0	(D)	0	(D)	(D)	(D)	(S)	(D)	(D)	(D)
Petroleum refining and extraction.....	13,29	(D)	(D)	14	22	(S)	(S)	11	9	14	10	6
Rubber products.....	30	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stone, clay, and glass products.....	32	(D)	9	10	(D)	(D)	(D)	(D)	(D)	9	38	6
Primary metals.....	33	(D)	(D)	19	17	22	(D)	8	(S)	23	17	13
Ferrous metals and products.....	331-32,3398-99	(D)	(D)	(D)	1	(D)	(D)	1	(D)	17	(D)	(D)
Nonferrous metals and products.....	333-36	9	8	(D)	16	(D)	(D)	7	(D)	6	(D)	(D)
Fabricated metal products.....	34	49	95	150	163	178	203	226	294	222	243	86
Machinery.....	35	1,495	(D)	(D)	(D)	(D)	871	1,055	1,035	86	99	(D)
Office, computing, and accounting machines.....	357	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	33	28	(D)
Other machinery, except electrical.....	351-56,358-59	(D)	75	44	101	112	(D)	(D)	(D)	53	71	64
Electrical equipment.....	36	5,161	5,213	5,399	4,153	3,743	4,133	4,550	3,844	1,667	1,801	1,690
Radio and TV receiving equipment.....	365	(D)	0	0	0	0	0	0	(D)	(D)	(D)	(D)
Communication equipment.....	366	4,223	4,552	4,729	3,630	2,911	2,344	(D)	(D)	(D)	(D)	(D)
Electronic components.....	367	559	(D)	656	449	369	418	(D)	247	206	162	(D)
Other electrical equipment.....	361-64,369	(D)	(D)	14	74	463	1,371	(D)	(D)	(D)	(D)	(D)
Transportation equipment.....	37	(D)	17,708	20,784	20,865	19,262	17,097	12,570	11,202	10,617	10,392	13,130
Motor vehicles and motor vehicles equipment.....	371	820	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other transportation equipment.....	373-75,379	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Aircraft and missiles.....	372,376	16,582	14,984	18,519	18,402	16,828	15,248	11,096	(S)	9,372	8,794	11,462

See explanatory information and SOURCE at end of table.

Table A-13. Federal funds for industrial R&amp;D performance, by industry and size of company: 1985-95

Page 2 of 3

Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	
		[Dollars in millions]											
Distribution by industry:													
Professional and scientific instruments.....	38	\$391	\$351	\$272	\$191	\$263	\$737	\$1,865	\$2,221	\$2,577	\$3,384	\$3,460 (S)	
Scientific and mechanical measuring instruments.....	381-82	(D)	(D)	(D)	(S)	(S)	(S)	(D)	2,143	2,484	3,266	3,358 (S)	
Optical, surgical, photographic, and other instruments.....	384-87	(D)	(D)	(D)	95	101	87	(D)	78	92	118	102	
Other manufacturing industries.....	27,31,39	(D)	2	(D)	(D)	(D)	(D)	(D)	61	(D)	(D)	(D)	
Nonmanufacturing 1/.....		2,313	2,706	2,700	3,256	3,729	4,442	5,505	5,570	6,140	5,090	4,620	
Transportation and utilities.....	40-42,44-49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	252	
Communications.....	48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	
Telephone communications.....	481	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	
Other communications.....	482-484,489	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	
Electric, gas, and sanitary services.....	49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	93	
Other transportation and utilities.....	40-42,44-47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	
Trade.....	50-59	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	
Finance, insurance, and real estate.....	60-65,67	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	
Services.....	701,72,73,75-81, 83,84,87,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,270	
Business services.....	73	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	612	
Computer and data processing services.....	737	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	514	
Other business services.....	731-736,738	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	98	
Health services.....	80	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4	
Offices and clinics of medical doctors, hospitals, medical and dental labs....	801,806,807	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	
Other health services.....	802-805,808-809	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	
Engineering and management services.....	87	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,650	
Engineering, architectural, and surveying.....	871	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,883	
Research, development, and testing....	873	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	
Other engineering and management services.....	872,874	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	

See explanatory information and SOURCE at end of table.

Table A-13. Federal funds for industrial R&amp;D performance, by industry and size of company: 1985–95

Page 3 of 3

Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	
		[Dollars in millions]											
Distribution by industry:													
Other services.....	701,72,75–79,81, 83,84,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4
Other nonmanufacturing industries.....	07–12,14,15, 161–162,17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11
Distribution by size of company: [Number of employees]													
Total.....		\$27,196	\$27,891	\$30,752	\$30,343	\$28,554	\$28,125	\$26,372	\$24,722	\$22,809	\$22,463	\$23,451	
Fewer than 500.....		739	868	963	816	901	895	1,887	2,025	1,614	1,164	1,978	
500 to 999.....		117	137	115	131	117	(S)	181	151	182	182	225	
1,000 to 4,999.....		991	1,229	981	1,093	958	881	1,050	(S)	1,115	1,083	798	
5,000 to 9,999.....		672	796	748	864	740	257	816	763	764	825	243	
10,000 to 24,999.....		2,743	2,004	2,362	1,705	1,129	1,526	3,373	3,416	2,816	2,348	1,946 (S)	
25,000 or more.....		21,934	23,213	25,583	25,734	24,709	24,436	19,065	17,346	16,319	16,862	18,261	

1/ Until 1995, data were not broken down below this level of detail for most nonmanufacturing industries.

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.

NA = Not available.

NOTE: As a result of a new sample design, statistics for 1988–91 have been revised since originally published. These statistics now better reflect R&amp;D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-14. Federal funds for industrial R&amp;D performance, by industry and size of company: 1995

Page 1 of 3

Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[Dollars in millions]					
All Industries.....		\$23,451	\$1,978	\$225	\$798	\$243	\$1,946	\$18,261
Manufacturing.....		18,831	209	100	508	104	910	17,001
Food, kindred, and tobacco products .....	20,21	0	0	0	0	0	0	0
Textiles and apparel.....	22,23	(D)	(D)	0	0	0	0	0
Lumber, wood products, and furniture.....	24,25	(D)	(D)	0	0	0	0	0
Paper and allied products.....	26	(D)	0	0	(D)	0	0	(D)
Chemicals and allied products.....	28	210 (S)	18	0	11	(D)	172 (S)	(D)
Industrial chemicals.....	281-82,286	(D)	0	0	(D)	(D)	(D)	(D)
Drugs and medicines.....	283	14	(D)	0	(D)	(D)	(D)	(D)
Other chemicals.....	284-85,287-89	(D)	(D)	0	0	0	0	0
Petroleum refining and extraction.....	13,29	6	0	0	0	0	(D)	(D)
Rubber products.....	30	(D)	0	0	0	(D)	(D)	0
Stone, clay, and glass products.....	32	6	(D)	(D)	(D)	(D)	0	0
Primary metals.....	33	13	(D)	(D)	(D)	(D)	(D)	(D)
Ferrous metals and products.....	331-32,3398-99	(D)	0	0	0	(D)	(D)	0
Nonferrous metals and products.....	3	(D)	(D)	(D)	(D)	0	(D)	(D)
Fabricated metal products.....	34	86	6	(D)	0	(D)	(D)	0
Machinery.....	35	(D)	11	(D)	(D)	(D)	38	(D)
Office, computing, and accounting machines.....	357	(D)	(D)	(D)	(D)	(D)	0	(D)
Other machinery, except electrical.....	351-56,358-59	64	(D)	(D)	(D)	(D)	38	(D)
Electrical equipment.....	36	1,690	77	(D)	28	(D)	0	1,563
Radio and TV receiving equipment.....	365	(D)	0	0	(D)	0	0	0
Communication equipment.....	366	(D)	45	(D)	(D)	0	0	(D)
Electronic components.....	367	(D)	28	10	(D)	(D)	0	(D)
Other electrical equipment.....	361-64,369	(D)	4	(D)	0	(D)	0	(D)
Transportation equipment.....	37	13,130	(D)	(D)	(D)	26	(D)	12,579
Motor vehicles and motor vehicles equipment.....	371	(D)	0	0	0	0	0	(D)

See explanatory information and SOURCE at end of table.

Table A-14. Federal funds for industrial R&amp;D performance, by industry and size of company: 1995

Page 2 of 3

Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[Dollars in millions]					
Other transportation equipment.....	373-75,379	(D)	0	0	0	0	(D)	(D)
Aircraft and missiles.....	372,376	11,462	(D)	(D)	(D)	\$26	(D)	\$11,088
Professional and scientific instruments.....	38	3,460 (S)	\$85	\$68	(D)	(D)	(D)	2,779 (S)
Scientific and mechanical measuring instruments.....	381-82	3,358 (S)	72	(D)	(D)	(D)	(D)	(D)
Optical, surgical, photographic, and other instruments.....	384-87	102	14	(D)	(D)	(D)	0	(D)
Other manufacturing industries .....	27,31,39	(D)	(D)	0	0	0	(D)	0
Nonmanufacturing .....		\$4,620	1,769	125	290	(D)	(D)	1,261
Transportation and utilities.....	40-42,44-49	252	0	0	(D)	(D)	\$20	(D)
Communications.....	48	(D)	0	0	0	0	0	(D)
Telephone communications.....	481	(D)	0	0	0	0	0	(D)
Other communications.....	482-484,489	0	0	0	0	0	0	0
Electric, gas, and sanitary services.....	49	93	0	0	(D)	(D)	20	(D)
Other transportation and utilities.....	40-42,44-47	(D)	0	0	(D)	0	0	0
51 Trade.....	50-59	(D)	0	(D)	0	0	0	(D)
Finance, insurance, and real estate.....	60-65,67	(D)	0	(D)	(D)	0	0	0
Services.....	701,72,73,75- 81,83,84,87,89	4,270	(D)	112	259	(D)	(D)	(D)
Business services.....	73	612	508	(D)	(D)	0	0	(D)
Computer and data processing services.....	737	514	(D)	(D)	(D)	0	0	(D)
Other business services.....	731-736,738	98	(D)	(D)	0	0	0	0
Health services.....	80	4	(D)	0	(D)	0	(D)	(D)
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	(D)	(D)	0	0	0	(D)	(D)
Other health services.....	802-805,808-809	(D)	(D)	0	(D)	0	0	0

See explanatory information and SOURCE at end of table.

Table A-14. Federal funds for industrial R&amp;D performance, by industry and size of company: 1995

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Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[Dollars in millions]					
Engineering and management services...	87	3,650	1,250	90	(D)	(D)	(D)	(D)
Engineering, architectural, and surveying.....	871	1,883	632	(D)	72	(D)	(D)	(D)
Research, development, and testing...	873	(D)	(D)	(D)	(D)	0	(D)	0
Other engineering and management services.....	872,874	(D)	(D)	0	0	0	0	0
Other services.....	701,72,75-79, 81,83,84,89	4	(D)	0	(D)	0	0	0
Other nonmanufacturing industries .....	07-12,14,15, 161-162,17	11	(D)	0	0	(D)	0	0

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

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(S) = Indicates imputation of more than 50 percent.

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-15. Federal funds for industrial R&amp;D performance, by agency and selected industry in selected years: 1974-95

Page 1 of 2

Industry	SIC code	1974	1975	1976	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995
		[Dollars in millions]												
All agencies.....		\$8,220	\$8,605	\$9,561	\$10,485	\$12,518	\$16,382	\$20,680	\$27,196	\$30,752	\$28,554	\$26,372	\$22,809	\$23,451
Chemicals and allied products.....	28	214	236	266	295	346	421	393	230	190	126	209	(D)	210 (S)
Machinery.....	35	511	509	532	477	335	694	1,116	1,495	(D)	(D)	1,055	88	(D)
Electrical equipment.....	36	2,307	2,307	2,555	2,648	3,309	3,920	4,523	5,161	5,399	3,743	4,550	1,402	1,690
Motor vehicles and other transportation equipment.....	371,373-75,379	335	365	(T)	(T)	(T)	(T)	(T)	(T)	(D)	(D)	(D)	(D)	(D)
Aircraft and missiles.....	372,376	4,003	4,434	4,930	5,486	5,840	8,528	11,396	16,582	18,519	16,828	11,096	9,369	11,462
Other industries.....	--	850	754	(T)	(T)	(T)	(T)	(T)	(T)	(T)	(T)	(D)	9,491	8,333
DOD 1/														
Total.....		5,919	5,812	6,222	6,950	7,939	10,540	14,571	20,948	22,252	(S)	(S)	15,044	13,876
Chemicals and allied products.....	28	39	27	28	32	36	40	48	(S)	(D)	(S)	(D)	(D)	139
Machinery.....	35	426	405	442	395	541	599	963	1,287	(D)	(D)	748	58	47
Electrical equipment.....	36	1,643	1,570	1,607	1,692	1,920	2,338	3,057	3,812	(S)	2,229	(S)	(D)	1,442 (S)
Motor vehicles and other transportation equipment.....	371,373-75,379	251	288	337	382	(T)	(T)	(T)	(D)	(D)	(D)	(D)	888	1,199
Aircraft and missiles.....	372,376	2,992	3,120	3,408	3,900	4,210	6,121	8,888	13,918	13,717	(S)	(S)	6,373	6,631 (S)
Other industries.....	--	568	402	400	461	(T)	(T)	(T)	(D)	(D)	(D)	(D)	5,707	4,418
NASA 1/														
Total.....		1,095	1,409	1,604	1,697	1,786	2,306	2,150	(S)	2,805	(S)	(S)	435	2,054
Chemicals and allied products.....	28	(T)	(T)	(T)	(T)	(T)	(T)	(S)	(D)	0	(S)	(S)	2	4
Machinery.....	35	63	62	62	54	74	81	(T)	(D)	(D)	(D)	(D)	(D)	2
Electrical equipment.....	36	162	186	200	208	252	317	188	90	115	(D)	(S)	(D)	(D)
Motor vehicles and other transportation equipment.....	371,373-75,379	25	27	(T)	(T)	(T)	(T)	(T)	(D)	(D)	(D)	(D)	20	(D)
Aircraft and missiles.....	372,376	789	1,082	1,267	1,348	1,221	1,785	1,959	(S)	2,650	(S)	(S)	236	985 (S)
Other industries.....	--	(1)	(1)	45	44	119	70	(T)	(D)	(D)	(D)	(D)	137	946
DOE														
Total.....		2/	2/	2/	2/	1,575	1,976	1,949	2,901	2,968	3,221	(S)	2,961	3,547
Chemicals and allied products.....	28	2/	2/	2/	2/	(T)	(T)	(S)	171	(S)	(S)	(D)	(D)	40
Machinery.....	35	2/	2/	2/	2/	(T)	(T)	(S)	(D)	(S)	(D)	(S)	(S)	31
Electrical equipment.....	36	2/	2/	2/	2/	784	951	917	1,188	1,184	1,353	(S)	57	72

See explanatory information and SOURCE at end of table.

**Table A-15. Federal funds for industrial R&D performance, by agency and selected industry in selected years: 1974–95**

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Industry	SIC code	1974	1975	1976	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995
		[Dollars in millions]												
Motor vehicles and other transportation equipment.....	371,373–75,379	2/	2/	2/	2/	\$16	\$20	(T)	(T)	(D)	(D)	(D)	(D)	\$0
Aircraft and missiles.....	372,376	2/	2/	2/	2/	253	340	\$207	\$468	\$688	(S)	(S)	(S)	2,498
Other industries.....	--	2/	2/	2/	2/	287	356	(T)	(T)	(D)	(D)	(D)	1,197	906

1/ For 1974, funds were based on approximately 175 companies leading in Federal R&D funds; 1975–95 funds are based on all companies reporting Federal R&D funds.

2/ Data was not tabulated for this agency prior to 1979.

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

(T) = Not separately available but included in total.

**NOTES:** Data for DOD, NASA, and DOE do not sum to the totals because the data reported by all other Federal agencies are not tabulated. In addition, Federal R&D data collected with each annual sample (on form RD-1A) is not allocated by agency type.

As a result of a new sample design, statistics for 1988–91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-16. Number of R&amp;D performing companies reporting Federal R&amp;D funds and total number of R&amp;D-performing companies, by industry and size of company: 1995

Page 1 of 3

Industry	SIC code	Size of company													
		Total		Fewer than 500 employees		500 to 999 employees		1,000 to 4,999 employees		5,000 to 9,999 employees		10,000 to 24,999 employees		25,000 or more employees	
		Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal
All Industries.....		33,314	2,117	30,284	1,925	1,235	44	1,217	50	274	22	172	32	131	43
Manufacturing.....		17,537	503	15,400	379	794	19	955	29	179	17	131	25	78	34
Food, kindred, and tobacco products.	20,21	780	0	629	0	45	0	72	0	12	0	12	0	10	0
Textiles and apparel.....	22,23	623	1	527	1	41	0	38	0	6	0	9	0	2	0
Lumber, wood products, and furniture.....	24,25	690	1	610	1	31	0	40	0	7	0	1	0	1	0
Paper and allied products.....	26	239	3	160	0	17	0	41	1	7	0	9	0	6	2
Chemicals and allied products.....	28	1,600	124	1,386	104	59	0	89	7	39	3	19	7	8	3
Industrial chemicals.....	281-82,286	386	14	304	0	36	0	29	4	5	2	9	6	3	2
Drugs and medicines.....	283	339	28	288	22	10	0	26	3	3	1	8	1	4	1
Other chemicals.....	284-85,287-89	875	82	794	82	13	0	34	0	31	0	2	0	1	0
Petroleum refining and extraction.....	13,29	54	3	28	0	1	0	10	0	2	0	9	2	4	1
Rubber products.....	30	920	3	769	0	75	0	61	0	8	1	4	2	2	0
Stone, clay, and glass products.....	32	399	6	344	2	26	1	22	2	3	1	4	0	0	0
Primary metals.....	33	258	15	150	7	36	2	50	2	14	1	5	2	3	1
Ferrous metals and products.....	331-32,3398-99	73	2	17	0	11	0	30	0	12	1	2	1	1	0
Nonferrous metals and products....	333-36	185	13	132	7	25	2	20	2	2	0	3	1	2	1
Fabricated metal products.....	34	1,392	13	1,233	6	68	1	69	0	8	2	14	4	0	0
Machinery.....	35	3,937	22	3,613	9	131	2	150	3	22	2	15	4	6	2
Office, computing, and accounting machines.....	357	426	6	377	2	15	1	25	1	6	1	2	0	1	1
Other machinery, except electrical.....	351-56,358-59	3,511	16	3,236	7	116	1	125	2	16	1	13	4	5	1
Electrical equipment.....	36	2,475	51	2,195	31	111	7	133	5	15	2	9	0	12	6
Radio and TV receiving equipment.....	365	84	1	75	0	3	0	6	1	0	0	0	0	0	0
Communication equipment.....	366	466	10	404	7	32	1	24	1	2	0	2	0	2	1
Electronic components.....	367	893	27	786	18	39	3	56	3	7	1	2	0	3	1
Other electrical equipment.....	361-64,369	1,032	13	930	5	37	3	47	0	6	1	5	0	7	4

See explanatory information and SOURCE at end of table.

Table A-16. Number of R&amp;D performing companies reporting Federal R&amp;D funds and total number of R&amp;D-performing companies, by industry and size of company: 1995

Page 2 of 3

Industry	SIC code	Total		Size of company											
				Fewer than 500 employees		500 to 999 employees		1,000 to 4,999 employees		5,000 to 9,999 employees		10,000 to 24,999 employees		25,000 or more employees	
		Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal
Transportation equipment.....	37	599	23	462	1	35	1	63	2	15	3	9	2	15	14
Motor vehicles and motor vehicles equipment.....	371	483	3	390	0	29	0	46	0	9	0	5	0	4	3
Other transportation equipment....	373-75,379	31	3	14	0	3	0	9	0	0	0	3	1	2	2
Aircraft and missiles.....	372,376	85	17	58	1	3	1	8	2	6	3	1	1	9	9
Professional and scientific instruments.....	38	2,663	237	2,489	217	89	5	68	7	9	2	2	1	6	5
Scientific and mechanical measuring instruments.....	381-82	1,731	224	1,667	208	33	4	23	6	3	1	1	1	4	4
Optical, surgical, photographic, and other instruments.....	384-87	933	13	823	9	56	1	45	1	6	1	1	0	2	1
Other manufacturing industries.....	27,31,39	908	2	805	1	30	0	48	0	11	0	10	1	3	0
Nonmanufacturing.....		15,777	1,613	14,884	1,546	441	25	262	21	95	5	41	7	53	9
Transportation and utilities.....	40-42,44-49	249	13	123	0	2	0	70	4	18	1	15	4	21	4
Communications.....	48	99	3	58	0	2	0	27	0	1	0	0	0	11	3
Telephone communications.....	481	63	3	25	0	0	0	25	0	1	0	0	0	11	3
Other communications.....	482-484,489	37	0	32	0	2	0	2	0	0	0	0	0	0	0
Electric, gas, and sanitary services....	49	132	9	64	0	0	0	38	3	16	1	13	4	2	1
Other transportation and utilities.....	40-42,44-47	18	1	2	0	0	0	5	1	1	0	2	0	8	0
Trade.....	50-59	5,727	4	5,593	0	22	2	52	0	40	0	5	0	15	2
Finance, insurance, and real estate....	60-65,67	169	14	74	0	57	12	15	1	16	0	2	0	5	0
Services.....	701,72,73,75-81,83,84,87,89	8,286	1,580	8,034	1,545	100	11	109	16	17	2	16	3	10	3
Business services.....	73	4,266	577	4,106	565	68	3	68	8	10	0	7	0	7	1
Computer and data processing services.....	737	3,557	265	3,429	255	56	2	57	8	7	0	5	0	3	1
Other business services.....	731-736,738	709	311	677	310	12	1	11	0	3	0	2	0	4	0

See explanatory information and SOURCE at end of table.

Table A-16. Number of R&amp;D performing companies reporting Federal R&amp;D funds and total number of R&amp;D-performing companies, by industry and size of company: 1995

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Industry	SIC code	Size of company													
		Total		Fewer than 500 employees		500 to 999 employees		1,000 to 4,999 employees		5,000 to 9,999 employees		10,000 to 24,999 employees		25,000 or more employees	
		Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal
Health services.....	80	1,055	6	1,036	3	6	0	9	1	0	0	3	1	1	1
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	745	4	730	2	6	0	5	0	0	0	2	1	1	1
Other health services.....	802-805, 808-809	310	2	306	1	0	0	3	1	0	0	1	0	0	0
Engineering and management services.....	87	2,666	992	2,613	973	22	8	24	6	3	2	3	2	1	1
Engineering, architectural, and surveying.....	871	1,052	410	1,013	396	15	5	20	5	2	2	1	1	1	1
Research, development, and testing.....	873	1,333	581	1,324	576	6	3	2	1	0	0	1	1	0	0
Other engineering and management services.....	872,874	281	1	276	1	1	0	2	0	1	0	1	0	0	0
Other services.....	701,72,75-81, 83,84,89	300	5	279	4	4	0	8	1	4	0	3	0	1	0
Other nonmanufacturing industries....	07-12,14,15, 161-162,17	1,344	3	1,059	1	259	0	16	0	5	2	3	0	2	0

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

**Table A-17. Industry-administered federally funded R&D centers (FFRDCs)—funds by character of work,  
full-time-equivalent (FTE) R&D scientists and engineers, and total number of employees: 1986–95**

Item	1986	1987	1988	1989	1990	1991	1992	1993 3/	1994	1995
[Dollars in millions]										
Total R&D funds.....	\$1,891	\$1,995	\$2,122	\$2,195	\$2,323	\$2,277	\$2,353	\$1,965	\$2,202	\$2,273
Basic research.....	117	142	337	398	499	461	474	492	503	530
Applied research.....	629	623	371	374	386	433	507	435	503	535
Development.....	1,145	1,230	1,414	1,423	1,438	1,383	1,373	1,039	1,196	1,209
[Employment ]										
Number of FTE R&D scientists and engineers 1/.....	7,432	8,432	10,994	11,618	12,438	11,977	11,770	8,083	8,362	9,033
Total employment 2/.....	24,156	33,804	36,143	35,716	42,153	39,697	40,755	23,930	23,905	24,031

1/ These data were recorded in January of the year following that listed.

2/ These data were recorded in March of the year listed.

3/ The number of industry-administered FFRDCs remained the same in 1993 compared with 1992, however the levels of R&D performed and employment decreased because of changes in contract requirements and funding.

**NOTE:** Industry-administered federally funded research and development centers (FFRDCs) conduct R&D almost exclusively for use by the Federal Government. Data for these FFRDCs administered by industry are included in Federal R&D support shown in other tables under the industry classifications of the administering firms. See section C for a listing of industry-administered FFRDCs and their locations.

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As a result of a new sample design, statistics for 1988–91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

**Table A-18. Number of R&D-performing companies in manufacturing and nonmanufacturing industries, by size of company: 1995**

Page 1 of 1

Size of company [Number of employees]	Total	Manufacturing	Nonmanufacturing
Total.....	33,314	17,537	15,777
Fewer than 500.....	30,284	15,400	14,884
500 to 999.....	1,235	794	441
1,000 to 4,999.....	1,217	955	262
5,000 to 9,999.....	274	179	95
10,000 to 24,999.....	172	131	41
25,000 or more.....	131	78	53

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

**Table A-19. Concentration of total, Federal, and company and other R&D funds and net sales of R&D-performing companies, by size of R&D program: 1985–95**

Page 1 of 1

Companies ranked by size of R&D program	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Percent of total (company, Federal, and other) R&D funds											
First 4 (1-4).....	18	19	19	18	19	18	16	15	17	16	16
Next 4 (5-8).....	12	11	12	12	13	13	8	8	7	9	8
Next 12 (9-20).....	17	14	16	17	16	15	12	13	13	14	13
Next 20 (21-40).....	13	13	12	12	12	12	11	11	12	12	12
Next 60 (41-100).....	16	15	14	15	15	16	15	15	16	14	14
Next 100 (101-200).....	9	10	8	8	8	9	12	12	8	9	8
Next 200 (201-400).....	5	8	6	7	6	7	6	6	7	7	7
Percent of Federal R&D funds											
First 4 (1-4).....	29	30	31	31	36	38	14	11	23	31	35
Next 4 (5-8).....	15	16	18	18	15	16	21	18	17	20	19
Next 12 (9-20).....	27	28	27	27	30	26	21	27	32	31	27
Next 20 (21-40).....	16	15	15	15	11	12	15	13	16	10	8
Next 60 (41-100).....	7	7	7	6	6	6	13	11	5	6	5
Next 100 (101-200).....	2	2	1	3	1	1	3	4	5	1	3
Next 200 (201-400).....	0	1	0	0	0	0	2	2	2	1	3
Percent of company and other (except Federal) R&D funds											
First 4 (1-4).....	23	20	20	21	22	21	17	17	17	17	16
Next 4 (5-8).....	7	7	7	7	7	7	7	8	7	7	7
Next 12 (9-20).....	12	12	12	12	13	12	10	12	12	11	11
Next 20 (21-40).....	12	10	11	12	12	13	10	11	11	11	11
Next 60 (41-100).....	18	16	16	16	16	17	16	17	14	14	14
Next 100 (101-200).....	10	10	10	10	10	10	15	14	9	9	9
Next 200 (201-400).....	7	8	8	8	8	8	7	7	8	8	8
Percent of net sales ranked by size of total R&D funds											
First 4 (1-4).....	8	8	7	7	6	8	7	8	8	8	8
Next 4 (5-8).....	4	5	5	5	5	4	3	3	3	2	2
Next 12 (9-20).....	5	5	5	5	5	5	4	4	4	5	6
Next 20 (21-40).....	8	7	7	6	5	5	4	4	4	4	4
Next 60 (41-100).....	12	10	11	11	12	12	12	12	11	10	9
Next 100 (101-200).....	13	10	8	9	8	9	9	9	8	8	8
Next 200 (201-400).....	15	9	12	10	11	12	11	11	10	10	10

**NOTES:** Companies were ranked individually for each year; therefore, particular companies comprising the size groups may have changed from year to year.

As a result of a new sample design, statistics for 1988–91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-20. Domestic net sales of R&amp;D-performing companies, by industry and size of company: 1994–95

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Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[Dollars in millions]					
1994								
All Industries.....		\$3,595,278	\$343,987	\$116,833	\$582,384	\$400,872	\$706,139	\$1,445,062
Manufacturing.....		2,523,767	251,275	94,068	424,581	267,088	504,050	982,703
Food, kindred, and tobacco products.....	20,21	302,528	12,427	12,160	57,680	33,830	50,250	136,182
Textiles and apparel.....	22,23	50,284	4,717	(D)	14,704	4,073	16,779	(D)
Lumber, wood products, and furniture.....	24,25	32,193	4,914	2,415	10,781	7,403	(D)	(D)
Paper and allied products.....	26	130,358	16,808	1,347	15,372	14,387	36,193	46,252
Chemicals and allied products.....	28	322,039	29,423	9,511	52,769	39,391	93,368	97,576
Industrial chemicals.....	281-82,286	143,233	16,804	5,885	18,970	11,137	39,004	51,432
Drugs and medicines.....	283	94,328	3,444	(D)	15,713	10,589	32,310	(D)
Other chemicals.....	284-85,287-89	84,477	9,176	(D)	18,086	17,664	22,055	(D)
Petroleum refining and extraction.....	13,29	235,280	1,838	1,065	24,744	11,582	89,211	106,840
Rubber products.....	30	62,223	19,289	3,553	16,366	6,213	(D)	(D)
Stone, clay, and glass products.....	32	35,778	3,319	(D)	6,620	5,179	14,307	(D)
Primary metals.....	33	116,624	7,668	8,839	22,381	30,748	18,662	28,326
Ferrous metals and products.....	331-32,3398-99	69,915	5,058	1,793	13,679	21,328	(D)	(D)
Nonferrous metals and products.....	333-36	46,710	2,611	7,046	8,702	9,420	(D)	(D)
Fabricated metal products.....	34	91,075	25,945	(D)	27,036	6,996	23,626	(D)
Machinery.....	35	210,835	58,946	16,328	52,135	29,452	(D)	(D)
Office, computing, and accounting machines.....	357	51,709	9,123	3,072	17,521	10,489	(D)	(D)
Other machinery, except electrical.....	351-56,358-59	159,126	49,823	13,256	34,614	18,964	(D)	(D)
Electrical equipment.....	36	259,693	30,526	11,677	42,493	18,894	41,687	114,417
Radio and TV receiving equipment.....	365	6,650	1,678	945	4,028	0	0	0
Communication equipment.....	366	48,152	6,490	1,948	10,366	(D)	(D)	(D)
Electronic components.....	367	80,312	11,852	4,472	15,803	(D)	(D)	(D)
Other electrical equipment.....	361-64,369	124,579	10,505	4,312	12,296	5,110	21,986	70,370
Transportation equipment.....	37	477,508	6,558	6,610	46,686	36,476	44,139	337,038
Motor vehicles and motor vehicles equipment.....	371	350,952	2,989	5,376	36,662	(D)	(D)	(D)

See explanatory information and SOURCE at end of table.

Table A-20. Domestic net sales of R&amp;D-performing companies, by industry and size of company: 1994–95

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Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[Dollars in millions]					
1994								
Other transportation equipment.....	373–75,379	\$23,431	\$2,488	\$867	\$4,676	(D)	(D)	(D)
Aircraft and missiles.....	372,376	103,125	1,081	367	5,348	\$4,729	\$8,176	\$83,424
Professional and scientific instruments.....	38	124,541	19,365	7,270	19,472	9,331	5,607	63,496
Scientific and mechanical measuring instruments.....	381–82	63,419	6,698	(D)	6,748	4,331	(D)	36,953
Optical, surgical, photographic, and other instruments.....	384–87	61,121	12,667	(D)	12,724	5,000	(D)	26,543
Other manufacturing industries.....	27,31,39	72,809	9,534	(D)	15,343	13,132	24,074	(D)
Nonmanufacturing 1/.....		1,071,511	92,712	22,765	157,803	133,784	202,089	462,359
Transportation and utilities.....	40–42,44–49	NA	NA	NA	NA	NA	NA	NA
Communications.....	48	NA	NA	NA	NA	NA	NA	NA
Telephone communications.....	481	NA	NA	NA	NA	NA	NA	NA
Other communications.....	482–484,489	NA	NA	NA	NA	NA	NA	NA
62	Electric, gas, and sanitary services.....	49	NA	NA	NA	NA	NA	NA
Other transportation and utilities.....	40–42,44–47	NA	NA	NA	NA	NA	NA	NA
Trade.....	50–59	NA	NA	NA	NA	NA	NA	NA
Finance, insurance, and real estate.....	60–65,67	NA	NA	NA	NA	NA	NA	NA
Services.....	701,72,73,75–81, 83,84,87,89	NA	NA	NA	NA	NA	NA	NA
Business services.....	73	NA	NA	NA	NA	NA	NA	NA
Computer and data processing services.....	737	NA	NA	NA	NA	NA	NA	NA
Other business services.....	731–736,738	NA	NA	NA	NA	NA	NA	NA
Health services.....	80	NA	NA	NA	NA	NA	NA	NA
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806, 807	NA	NA	NA	NA	NA	NA	NA
Other health services.....	802–805,808–809	NA	NA	NA	NA	NA	NA	NA

See explanatory information and SOURCE at end of table.

Table A-20. Domestic net sales of R&amp;D-performing companies, by industry and size of company: 1994–95

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Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[Dollars in millions]					
1994								
Engineering and management services.....	87	NA	NA	NA	NA	NA	NA	NA
Engineering, architectural, and surveying.....	871	NA	NA	NA	NA	NA	NA	NA
Research, development, and testing.....	873	NA	NA	NA	NA	NA	NA	NA
Other engineering and management services.....	872,874	NA	NA	NA	NA	NA	NA	NA
Other services.....	701,72,75–79, 81,83,84,89	NA	NA	NA	NA	NA	NA	NA
Other nonmanufacturing industries .....	07–12,14,15, 161–162,17	NA	NA	NA	NA	NA	NA	NA
1995								
All Industries.....		\$3,921,561	\$374,478	\$147,062	\$615,336	\$466,186	\$749,478	\$1,569,021
59 Manufacturing.....		2,756,605	235,280	103,696	475,358	309,009	578,348	1,054,914
Food, kindred, and tobacco products .....	20,21	313,839	9,809	7,917	54,931	33,436	60,183	147,563
Textiles and apparel.....	22,23	42,477	(D)	3,904	10,816	4,714	13,677	(D)
Lumber, wood products, and furniture.....	24,25	31,969	(D)	3,082	11,090	6,433	(D)	(D)
Paper and allied products.....	26	138,086	2,128	2,552	21,231	10,398	38,581	63,196
Chemicals and allied products.....	28	371,302	24,525	14,381	64,432	88,643	95,305	84,015
Industrial chemicals.....	281–82,286	133,416	9,180	9,192	25,760	9,930	46,587	32,767
Drugs and medicines.....	283	97,970	3,097	1,416	17,005	4,443	(D)	(D)
Other chemicals.....	284–85,287–89	139,915	12,248	3,773	21,667	74,270	(D)	(D)
Petroleum refining and extraction.....	13,29	245,662	1,053	(D)	20,614	(D)	136,022	78,656
Rubber products.....	30	76,816	22,555	(D)	19,650	7,385	7,583	(D)
Stone, clay, and glass products.....	32	30,363	2,953	2,883	8,098	3,795	12,634	0
Primary metals.....	33	115,664	4,145	4,714	29,665	25,053	19,425	32,662
Ferrous metals and products.....	331–32,3398–99	66,175	1,102	939	14,073	(D)	(D)	(D)
Nonferrous metals and products.....	333–36	49,489	3,042	3,775	15,592	(D)	(D)	(D)

See explanatory information and SOURCE at end of table.

Table A-20. Domestic net sales of R&amp;D-performing companies, by industry and size of company: 1994–95

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Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[Dollars in millions]					
1995								
Fabricated metal products.....	34	\$89,012	\$17,182	\$7,178	\$20,867	\$10,304	\$33,480	\$0
Machinery.....	35	269,689	73,687	17,591	63,652	36,592	46,915	31,252
Office, computing, and accounting machines.....	357	57,983	4,885	3,557	18,649	13,138	(D)	(D)
Other machinery, except electrical.....	351–56,358–59	211,706	68,802	14,034	45,003	23,454	(D)	(D)
Electrical equipment.....	36	315,070	32,757	15,181	60,102	24,103	42,146	140,782
Radio and TV receiving equipment.....	365	6,921	1,051	782	5,088	0	0	0
Communication equipment.....	366	47,827	9,771	4,132	12,528	(D)	(D)	(D)
Electronic components.....	367	120,519	12,479	5,998	26,438	(D)	(D)	(D)
Other electrical equipment.....	361–64,369	139,803	9,456	4,269	16,048	7,452	16,967	85,611
Transportation equipment.....	37	532,826	7,430	2,889	51,802	29,267	45,941	395,497
Motor vehicles and motor vehicles equipment.....	371	376,945	6,336	2,143	42,788	23,508	(D)	(D)
Other transportation equipment.....	373–75,379	24,978	(D)	451 (S)	5,132	0	8,620	(D)
Aircraft and missiles.....	372,376	130,904	(D)	296	3,881	5,759	(D)	117,695
¶ Professional and scientific instruments.....	38	116,696	20,099	10,402	24,918	9,897	(D)	(D)
Scientific and mechanical measuring instruments.....	381–82	57,720	12,513	4,030	9,395	3,020	(D)	(D)
Optical, surgical, photographic, and other instruments.....	384–87	58,976	7,586	6,373	15,522	6,877	(D)	(D)
Other manufacturing industries .....	27,31,39	67,134	9,696	2,864	13,491	(D)	19,640	11,229
Nonmanufacturing .....		1,164,955	139,198	43,366	139,978	157,177	171,130	514,106
Transportation and utilities.....	40–42,44–49	460,565	(D)	(D)	43,898	50,520	75,016	288,497
Communications.....	48	220,446	433	(D)	7,021	(D)	0	211,201
Telephone communications.....	481	218,474	(D)	0	(D)	(D)	0	211,201
Other communications.....	482–484,489	1,972	(D)	(D)	(D)	0	0	0
Electric, gas, and sanitary services.....	49	168,314	(D)	0	32,841	48,195	(D)	(D)
Other transportation and utilities.....	40–42,44–47	71,805	(D)	0	4,036	(D)	(D)	(D)

See explanatory information and SOURCE at end of table.

Table A-20. Domestic net sales of R&amp;D-performing companies, by industry and size of company: 1994–95

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Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[Dollars in millions]					
1995								
Trade.....	50-59	\$315,337	\$43,687	\$5,136	\$47,538	\$59,928	\$24,586	\$134,462
Finance, insurance, and real estate.....	60-65,67	105,961	(D)	14,389	11,717	24,087	(D)	(D)
Services.....	701,72,73,75-81, 83,84,87,89	230,175	90,519	9,968	30,488	14,721	50,754	33,725
Business services.....	73	91,588	20,395	7,000	21,397	8,102	18,490	16,205
Computer and data processing services.....	737	76,697	18,576	6,412	19,216	(D)	(D)	9,443
Other business services.....	731-736,738	14,891	1,819	589	2,181	(D)	(D)	6,762
Health services.....	80	14,480	3,097	(D)	993	0	(D)	(D)
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	13,812	2,906	(D)	572	0	(D)	(D)
Other health services.....	802-805,808-809	668	191	0	421 (S)	0	(D)	0
Engineering and management services.....	87	98,178	64,091	(D)	6,246	4,113	10,322	(D)
Engineering, architectural, and surveying.....	871	51,343	26,723	1,379	5,004	(D)	(D)	(D)
Research, development, and testing.....	873	39,209	35,844	645	(D)	0	(D)	0
Other engineering and management services.....	872,874	7,627	1,524	(D)	(D)	(D)	(D)	0
Other services.....	701,72,75-79, 81,83,84,89	25,929	2,936	442	1,852	2,506	(D)	(D)
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	52,917	2,349	(D)	6,337	7,921	(D)	(D)

1/ Until 1995, data were not broken down below this level of detail for most nonmanufacturing industries.

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

NA = Not available.

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-21. Total (company, Federal, and other) R&amp;D funds as a percent of net sales in R&amp;D-performing companies, by industry and size of company: 1985–95

Page 1 of 3

Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
		[Percent]										
All Industries 1/.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	3.6%	3.6%
Distribution by industry:												
Manufacturing.....		4.4%	4.7%	4.6%	4.5%	4.3%	4.2%	4.2%	4.2%	3.8%	3.6	3.6
Food, kindred, and tobacco products.....	20,21	(D)	(D)	0.6	(D)	(D)	(D)	0.5	0.5	0.5	0.5	0.5
Textiles and apparel.....	22,23	(D)	(D)	(D)	(D)	(D)	(D)	0.6	(D)	(D)	(D)	(D)
Lumber, wood products, and furniture.....	24,25	0.8	0.6	0.6	(D)	0.6	0.6	(D)	(D)	(D)	(D)	(D)
Paper and allied products.....	26	(D)	(D)	(D)	(D)	0.8	1.0	1.1	(D)	(D)	(D)	(D)
Chemicals and allied products.....	28	5.0	5.2	5.3	5.3	5.4	5.3	5.4	5.5	(D)	(D)	4.7
Industrial chemicals.....	281–82,286	4.4	4.6	4.7	4.4	4.2	4.5	4.6	4.6	(D)	(D)	(D)
Drugs and medicines.....	283	(D)	8.5	(D)	8.8	(D)	(D)	8.9	9.6	12.5	10.2	10.4
Other chemicals.....	284–85,287–89	(D)	3.3	(D)	3.4	(D)	(D)	3.1	2.7	(D)	(D)	(D)
Petroleum refining and extraction.....	13,29	(D)	(D)	1.0	1.0	0.9	0.9	1.0	0.9	0.9	0.8	0.7
Rubber products.....	30	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stone, clay, and glass products.....	32	(D)	2.5	2.6	(D)	(D)	(D)	(D)	(D)	1.5	1.7	1.5
Primary metals.....	33	(D)	(D)	0.9	0.8	0.8	0.8	0.8	0.6	0.7	0.6	0.5
Ferrous metals and products.....	331–32,3398–99	(D)	(D)	(D)	0.5	(D)	(D)	(D)	(D)	0.5	(D)	(D)
Nonferrous metals and products.....	333–36	1.4	1.5	(D)	1.0	(D)	(D)	(D)	(D)	1.2	(D)	(D)
Fabricated metal products.....	34	1.5	1.5	1.5	1.3	1.5	1.4	1.5	1.5	1.4	1.2	1.1
Machinery.....	35	7.6	(D)	(D)	7.7	7.9	7.7	8.1	7.8	4.6	3.8	(D)
Office, computing, and accounting machines.....	357	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	9.9	7.9	(D)
Other machinery, except electrical.....	351–56,358–59	(D)	3.0	3.0	2.9	(D)	(D)	(D)	(D)	2.6	2.5	2.4
Electrical equipment.....	36	7.6	7.9	8.2	7.5	7.3	6.5	6.5	5.6	6.2	5.9	6.0
Radio and TV receiving equipment.....	365	(D)	3.6	3.2	2.4	1.8	1.6	(D)	(D)	(D)	(D)	(D)
Communication equipment.....	366	10.1	9.9	10.2	10.7	11.6	10.0	(D)	(D)	(D)	(D)	(D)
Electronic components.....	367	9.6	(D)	10.0	9.0	(D)	8.3	7.9	7.5	8.1	7.5	(D)
Other electrical equipment.....	361–64,369	(D)	(D)	2.7	2.5	(D)	3.7	(D)	(D)	(D)	(D)	(D)
Transportation equipment.....	37	(D)	8.3	8.7	8.9	8.1	7.5	7.3	7.1	6.4	5.9	6.1
Motor vehicles and motor vehicles equipment.....	371	3.8	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other transportation equipment.....	373–75,379	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Aircraft and missiles.....	372,376	14.9	13.4	14.7	16.3	13.5	11.8	12.1	11.8	12.5	13.8	12.9

See explanatory information and SOURCE at end of table.

Table A-21. Total (company, Federal, and other) R&amp;D funds as a percent of net sales in R&amp;D-performing companies, by industry and size of company: 1985-95

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Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	
		[Percent]											
Distribution by industry:													
Professional and scientific instruments.....	38	8.9%	8.8%	7.9%	7.4%	7.2%	8.0%	9.1%	9.4%	9.7%	9.2%	10.3%	
Scientific and mechanical measuring instruments.....	381-82	(D)	(D)	(D)	7.9	7.4	8.6	10.0	10.6	11.5	11.0	12.4	
Optical, surgical, photographic, and other instruments.....	384-87	(D)	(D)	(D)	7.3	7.3	7.7	8.1	8.3	8.1	7.3	8.2	
Other manufacturing industries.....	27,31,39	(D)	1.2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	
Nonmanufacturing 1/.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.7	
Transportation and utilities.....	40-42,44-49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2
Communications.....	48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)
Telephone communications.....	481	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)
Other communications.....	482-484,489	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0
Electric, gas, and sanitary services.....	49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.3
Other transportation and utilities.....	40-42,44-47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)
Trade.....	50-59	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)
Finance, insurance, and real estate.....	60-65,67	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)
Services.....	701,72,73,75-81, 83,84,87,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.8
Business services.....	73	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10.1
Computer and data processing services.....	737	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11.8
Other business services.....	731-736,738	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.6
Health services.....	80	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.2
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)
Other health services.....	802-805,808-809	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)
Other engineering and management services.....	872,874	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)
Other services.....	701,72,75-79,81, 83,84,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.6

See explanatory information and SOURCE at end of table.

Table A-21. Total (company, Federal, and other) R&amp;D funds as a percent of net sales in R&amp;D-performing companies, by industry and size of company: 1985-95

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Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	
		[Percent]											
Distribution by industry:													
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	8.0%
Distribution by size of company: [Number of employees]													
Total 1/.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	3.6%	3.4	
Fewer than 500.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	2.6	4.4	
500 to 999.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	2.6	3.2	
1,000 to 4,999.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	2.6	3.0	
5,000 to 9,999.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	2.2	2.0	
10,000 to 24,999.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	2.7	2.3	
25,000 or more.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	5.2	4.3	

1/ Beginning in 1995 this table includes both manufacturing and nonmanufacturing companies. Only manufacturing companies were included in prior years.

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

NA = Not available.

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**NOTE:** As a result of a new sample design, statistics for 1988-91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

**Table A-22. Company and other (except Federal) R&D funds as a percent of net sales in R&D-performing manufacturing companies, by industry and size of company: 1985-95**

Page 1 of 3

Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
		[Percent]										
All Industries 1/.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	2.9%	2.8%
Distribution by industry:												
Manufacturing.....		3.0%	3.2%	3.1%	3.1%	3.1%	3.1%	3.2%	3.3%	3.1%	2.9	2.9
Food, kindred, and tobacco products.....	20,21	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Textiles and apparel.....	22,23	0.5	0.5	0.4	0.4	0.5	0.6	0.6	0.6	0.6	0.6	0.9
Lumber, wood products, and furniture.....	24,25	0.8	0.6	0.6	0.6	0.6	0.6	0.9	0.9	0.7	0.6	0.7
Paper and allied products.....	26	0.8	0.7	0.6	0.8	0.8	1.0	1.1	1.0	1.1	1.0	1.0
Chemicals and allied products.....	28	4.9	5.1	5.2	5.2	5.4	5.3	5.3	5.4	6.0	5.1	4.7
Industrial chemicals.....	281-82,286	4.2	4.4	4.4	4.2	4.1	4.4	4.4	4.4	4.4	3.3	3.9
Drugs and medicines.....	283	8.0	8.4	8.7	8.8	8.9	8.8	8.9	9.6	12.5	10.2	10.4
Other chemicals.....	284-85,287-89	3.1	3.3	3.3	3.4	3.9	3.4	3.0	2.7	2.7	2.5	1.4
Petroleum refining and extraction.....	13,29	0.9	1.1	1.0	1.0	0.9	0.9	1.0	0.9	0.9	0.8	0.7
Rubber products.....	30	1.8	1.7	1.6	1.7	1.9	2.1	2.3	2.3	2.1	2.3	1.6
Stone, clay, and glass products.....	32	2.3	2.4	2.5	2.0	1.8	1.7	1.6	1.6	1.5	1.5	1.5
Primary metals.....	33	0.9	1.0	0.9	0.7	0.7	0.8	0.8	0.6	0.7	0.6	0.5
Ferrous metals and products.....	331-32,3398-99	0.5	0.7	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.3	0.3
Nonferrous metals and products.....	333-36	1.4	1.5	1.3	1.0	1.0	1.2	1.2	0.7	1.2	0.9	0.7
Fabricated metal products.....	34	1.4	1.4	1.2	1.1	1.2	1.1	1.2	1.1	1.1	1.0	1.1
Machinery.....	35	6.7	7.3	7.1	6.8	7.3	7.2	7.5	7.3	4.5	3.8	3.6
Office, computing, and accounting machines.....	357	12.4	12.4	12.3	11.2	13.1	14.4	14.9	13.7	9.8	7.9	8.1
Other machinery, except electrical.....	351-56,358-59	2.6	2.9	3.0	2.8	2.6	2.3	2.9	2.9	2.5	2.5	2.4
Electrical equipment.....	36	4.8	5.1	5.4	5.3	5.2	4.5	4.3	4.0	5.4	5.2	5.4
Radio and TV receiving equipment.....	365	4.3	3.6	3.2	2.4	1.8	1.6	1.0	0.6	4.0	1.0	1.6
Communication equipment.....	366	5.4	5.2	5.5	6.1	6.8	6.1	(S)	7.0	10.1	10.3	8.0
Electronic components.....	367	8.2	9.2	8.5	8.0	7.7	7.4	7.2	7.0	7.8	7.3	8.0
Other electrical equipment.....	361-64,369	2.0	2.2	2.6	2.3	2.3	2.2	2.2	2.1	2.3	2.1	2.5
Transportation equipment.....	37	3.4	3.6	3.4	3.5	3.5	3.4	4.0	4.2	3.9	3.7	3.6
Motor vehicles and motor vehicles equipment.....	371	3.1	3.3	3.4	3.4	3.7	3.7	4.1	4.0	3.7	3.4	3.6

See explanatory information and SOURCE at end of table.

**Table A-22. Company and other (except Federal) R&D funds as a percent of net sales in R&D-performing manufacturing companies, by industry and size of company: 1985-95**

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Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
		[Percent]										
<b>Distribution by industry:</b>												
Other transportation equipment.....	373-75,379	2.3%	2.7%	2.5%	2.6%	2.5%	2.1%	2.1%	2.1%	1.9%	1.2%	0.9%
Aircraft and missiles.....	372,376	3.9	4.0	3.6	3.9	3.3	3.1	4.0	4.7	4.7	5.3	4.2
Professional and scientific instruments.....	38	8.3	8.2	7.5	7.1	6.8	7.1	7.1	7.2	7.2	6.5	7.3
Scientific and mechanical measuring instruments.....	381-82	8.4	8.4	8.1	7.6	6.9	6.9	6.3	6.2	6.4	5.8	6.6
Optical, surgical, photographic, and other instruments.....	384-87	8.1	8.0	7.2	7.1	7.1	7.5	8.0	8.2	7.9	7.2	8.0
Other manufacturing industries.....	27,31,39	1.0	1.2	1.1	1.0	0.9	0.9	0.8	1.3	1.3	1.1	1.2
Nonmanufacturing 1/.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.4
Transportation and utilities.....	40-42,44-49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1
Communications.....	48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.2
Telephone communications.....	481	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.1
Other communications.....	482-484,489	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0
Electric, gas, and sanitary services.....	49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.2
Other transportation and utilities.....	40-42,44-47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.1
Trade.....	50-59	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.4
Finance, insurance, and real estate.....	60-65,67	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.7
Services.....	701,72,73,75-81, 83,84,87,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.9
Business services.....	73	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.5
Computer and data processing services.....	737	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11.1
Other business services.....	731-736,738	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.9
Health services.....	80	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.2
Offices and clinics of medical doctors, hospitals, medical and dental labs..	801,806,807	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.3
Other health services.....	802-805,808-809	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.4 (S)

See explanatory information and SOURCE at end of table.

**Table A-22. Company and other (except Federal) R&D funds as a percent of net sales in R&D-performing manufacturing companies, by industry and size of company: 1985–95**

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Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
		[Percent]										
<b>Distribution by industry:</b>												
Engineering and management services.....	87	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.1%
Engineering, architectural, and surveying.....	871	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.0
Research, development, and testing.....	873	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.2
Other engineering and management services.....	872,874	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.7
Other services.....	701,72,75–79,81, 83,84,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.6
Other nonmanufacturing industries .....	07–12,14,15, 161–162,17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.8
<b>Distribution by size of company:</b>												
[Number of employees]												
Total 1/.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	2.9%	2.8
Fewer than 500.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5	3.9
500 to 999.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5	3.0
1,000 to 4,999.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5	2.6
5,000 to 9,999.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	2.2	2.0
10,000 to 24,999.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	2.5	2.0
25,000 or more.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	3.6	3.1

1/ Beginning in 1995 this table includes both manufacturing and nonmanufacturing companies. Only manufacturing companies were included in prior years.

**KEY:** (S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.

NA = Not available.

**NOTE:** As a result of a new sample design, statistics for 1988–91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

**Table A-23. Total (company, Federal, and other) R&D funds as a percent of net sales in R&D-performing companies,  
by industry and ranked by size of R&D program: 1995**

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Industry	SIC code	Total R&D funds as a percent of net sales			Total R&D funds		
		First 4 companies	Next 4 companies	Next 12 companies	First 4 companies	Next 4 companies	Next 12 companies
		[Percent]			[Dollars in millions]		
All Industries.....		6.8%	12.4%	8.1%	\$20,734	\$10,350	\$17,620
Manufacturing.....		8.1	12.6	8.0	19,970	8,234	15,703
Food, kindred, and tobacco products.....	20,21	1.1	0.4	0.3	611	199	269
Textiles and apparel.....	22,23	2.2	1.3	0.6	110	56	71
Lumber, wood products, and furniture.....	24,25	0.8	1.1	0.9	73	42	33
Paper and allied products.....	26	2.3	1.0	0.4	980 (S)	151	150
Chemicals and allied products.....	28	9.1	6.8	8.9	3,751	2,753	4,820
Industrial chemicals.....	281-82,286	5.9	7.3	3.8	2,579	825	1,123
Drugs and medicines.....	283	11.2	8.9	13.5	3,592	2,277	3,128
Other chemicals.....	284-85,287-89	3.5	2.1	1.7	1,026	180	310
Petroleum refining and extraction.....	13,29	1.1	0.9	0.3	1,028	474	222
Rubber products.....	30	3.5	2.6	2.4	502	158	181
Stone, clay, and glass products.....	32	2.0	2.4	1.2	231	89	60
72 Primary metals.....	33	0.6	0.9	0.4	226	82	120
Ferrous metals and products.....	331-32,3398-99	0.3	0.4	0.8	85	46	61
Nonferrous metals and products.....	333-36	1.4	0.4	0.7	217	51	47
Fabricated metal products.....	34	3.7	1.3	0.8	269	133	161
Machinery.....	35	8.0	9.0	6.8	2,100	1,124	1,911
Office, computing, and accounting machines.....	357	12.6	6.8	13.7	1,878	917	1,119
Other machinery, except electrical.....	351-56,358-59	5.2	3.4	3.4	1,329	438	643
Electrical equipment.....	36	7.4	13.7	6.0	7,782	2,508	2,159
Radio and TV receiving equipment.....	365	1.6	3.9	1.6	74	15	17
Communication equipment.....	366	13.0	8.1	8.9	2,280	487	586
Electronic components.....	367	12.4	5.4	10.9	6,546	824	1,060
Other electrical equipment.....	361-64,369	3.3	2.3	1.9	2,280	410	355

See explanatory information and SOURCE at end of table.

**Table A-23. Total (company, Federal, and other) R&D funds as a percent of net sales in R&D-performing companies,  
by industry and ranked by size of R&D program: 1995**

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Industry	SIC code	Total R&D funds as a percent of net sales			Total R&D funds			
		First 4 companies	Next 4 companies	Next 12 companies	First 4 companies	Next 4 companies	Next 12 companies	
		[Percent]			[Dollars in millions]			
Transportation equipment.....	37	7.9%	6.9%	7.4%	\$19,731	\$6,241	\$5,450	
Motor vehicles and motor vehicles equipment.....	371	5.1	1.9	1.1	14,228	266	219	
Other transportation equipment.....	373-75,379	3.2	1.2	0.5	486	52	25	
Aircraft and missiles.....	372,376	14.9	12.7	8.3	10,308	5,105	1,477	
Professional and scientific instruments.....	38	15.2	9.4	12.0	5,352	1,481	1,421	
Scientific and mechanical measuring instruments.....	381-82	20.8	6.6	12.1	4,238	797	557	
Optical, surgical, photographic, and other instruments.....	384-87	10.5	8.5	8.9	2,513	395	592	
Other manufacturing industries.....	27,31,39	3.7	2.5	0.6	273	109	138	
Nonmanufacturing.....		7.7	12.6	0.1	8,847	3,436	3,455	
73	Transportation and utilities.....	40-42,44-49	3.9	0.6	0.3	4,602	231	240
	Communications.....	48	3.9	0.3	0.2	4,602	170	76
	Telephone communications.....	481	3.9	0.3	0.1	4,602	170	34
	Other communications.....	482-484,489	3.2	9.1	0.7	36	6	5
	Electric, gas, and sanitary services.....	49	0.7	0.4	0.1	180	55	71
	Other transportation and utilities.....	40-42,44-47	0.2	0.1	0.1	56	23	14
	Trade.....	50-59	11.3	6.1	1.8	4,995	383	726
	Finance, insurance, and real estate.....	60-65,67	2.7	0.9	0.3	336	108	79
	Services.....	701,72,73,75-81, 83,84,87,89	16.3	15.9	13.0	3,894	1,468	1,643
	Business services.....	73	17.6	14.9	24.9	2,317	861	1,028
	Computer and data processing services.....	737	17.6	14.9	24.9	2,317	861	1,028
	Other business services.....	731-736,738	7.7	1.5	0.6	58	29	30

See explanatory information and SOURCE at end of table.

**Table A-23. Total (company, Federal, and other) R&D funds as a percent of net sales in R&D-performing companies,  
by industry and ranked by size of R&D program: 1995**

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Industry	SIC code	Total R&D funds as a percent of net sales			Total R&D funds		
		First 4 companies	Next 4 companies	Next 12 companies	First 4 companies	Next 4 companies	Next 12 companies
		[Percent]			[Dollars in millions]		
Health services.....	80	5.6 %	6.3%	3.0%	(D)	\$20	\$24
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	5.6	4.9	3.5	(D)	19	16
Other health services.....	802-805,808-809	2.2	2.8	0.5	\$9	3	0
Engineering and management services.....	87	18.2	6.6	73.0	(D)	342	552
Engineering, architectural, and surveying.....	871	9.2	74.3	13.1	(D)	174	257
Research, development, and testing.....	873	49.1	97.5	90.8	1,378 (S)	234	405
Other engineering and management services.....	872,874	0.6	0.1	0.6	16	5	(D)
Other services.....	701,72,75-79,81, 83,84,89	0.7	1.8	0.7	100	21	25
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	1.7	1.3	0.3	191	42	36

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

**NOTE:** Rankings were based on total (company, Federal, and other) R&D funds.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

**Table A-24. Company and other (except Federal) R&D funds as a percent of net sales in R&D-performing companies, by industry, by size of company,  
and ranked by size of company-financed R&D program: 1995**

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Industry	SIC code	Company and other R&D funds as a percent of net sales			Company and other R&D funds		
		First 4 companies	Next 4 companies	Next 12 companies	First 4 companies	Next 4 companies	Next 12 companies
		[Percent]			[Dollars in millions]		
All Industries.....	.....	5.8%	6.5%	7.4%	\$17,863	\$7,278	\$11,970
Manufacturing.....	.....	6.4	5.4	6.2	15,681	5,409	10,540
Food, kindred, and tobacco products.....	20,21	1.1	0.4	0.3	611	199	269
Textiles and apparel.....	22,23	2.2	1.3	0.6	110	56	71
Lumber, wood products, and furniture.....	24,25	0.8	1.1	0.9	73	42	32
Paper and allied products.....	26	2.2	1.0	0.4	935 (S)	151	150
Chemicals and allied products.....	28	9.1	6.8	8.9	3,748	2,753	4,812
Industrial chemicals.....	281-82,286	5.9	6.3	3.9	2,570	720	1,063
Drugs and medicines.....	283	11.2	8.9	13.5	3,592	2,277	3,126
Other chemicals.....	284-85,287-89	3.5	2.1	1.7	1,026	180	310
Petroleum refining and extraction.....	13,29	1.1	0.9	0.3	1,025	473	219
Rubber products.....	30	3.4	1.9	2.5	443	141	169
Stone, clay, and glass products.....	32	2.0	1.7	1.7	231	88	56
Primary metals.....	33	0.6	0.9	0.4	220	81	120
Ferrous metals and products.....	331-32,3398-99	0.3	0.4	0.9	85	46	58
Nonferrous metals and products.....	333-36	1.3	0.4	0.7	210	51	47
Fabricated metal products.....	34	2.6	1.1	0.9	242	109	141
Machinery.....	35	7.9	9.0	7.5	2,077	1,117	1,895
Office, computing, and accounting machines.....	357	12.6	6.8	13.5	1,873	917	1,109
Other machinery, except electrical.....	351-56,358-59	5.1	3.3	3.3	1,305	424	625
Electrical equipment.....	36	6.4	9.9	6.1	6,702	2,240	1,938
Radio and TV receiving equipment.....	365	1.5	3.9	1.6	71	15	17
Communication equipment.....	366	11.0	6.8	8.9	1,835	466	582
Electronic components.....	367	11.3	5.4	10.0	6,001	816	1,043
Other electrical equipment.....	361-64,369	2.5	2.3	1.9	1,732	408	355

See explanatory information and SOURCE at end of table.

**Table A-24. Company and other (except Federal) R&D funds as a percent of net sales in R&D-performing companies, by industry, by size of company,  
and ranked by size of company-financed R&D program: 1995**

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Industry	SIC code	Company and other R&D funds as a percent of net sales			Company and other R&D funds			
		First 4 companies	Next 4 companies	Next 12 companies	First 4 companies	Next 4 companies	Next 12 companies	
		[Percent]			[Dollars in millions]			
Transportation equipment.....	37	5.1%	3.7%	2.4%	\$14,381	\$2,497	\$1,538	
Motor vehicles and motor vehicles equipment.....	371	4.7	1.9	1.1	12,893	266	219	
Other transportation equipment.....	373-75,379	1.0	1.2	0.5	152	52	25	
Aircraft and missiles.....	372,376	4.8	3.4	3.6	3,647	1,150	649	
Professional and scientific instruments.....	38	10.1	6.8	9.5	3,164	875	1,027	
Scientific and mechanical measuring instruments.....	381-82	7.7	10.6	3.4	1,587	388	404	
Optical, surgical, photographic, and other instruments.....	384-87	10.2	10.6	7.8	2,435	394	590	
Other manufacturing industries .....	27,31,39	3.7	2.5	0.6	272	109	138	
Nonmanufacturing.....		7.0	8.7	7.2	8,296	2,600	2,752	
76	Transportation and utilities.....	40-42,44-49	3.7	0.4	0.2	(D)	199	193
	Communications.....	48	3.7	0.4	0.2	(D)	170	76
	Telephone communications.....	481	3.7	0.3	0.1	(D)	170	34
	Other communications.....	482-484,489	3.2	9.1	0.7	36	6	5
	Electric, gas, and sanitary services.....	49	0.5	0.2	0.2	111	39	64
	Other transportation and utilities.....	40-42,44-47	0.1	0.2	0.0	51	17	11
Trade.....	50-59	11.1	6.1	1.8	4,920	383	726	
Finance, insurance, and real estate.....	60-65,67	2.7	0.9	0.3	336	108	79	
Services.....	701,72,73,75-81, 83,84,87,89	14.7	7.5	13.2	2,417	1,158	1,407	
Business services.....	73	17.6	14.9	23.6	2,317	861	1,011	
Computer and data processing services.....	737	17.6	14.9	23.6	2,317	861	1,011	
Other business services.....	731-736,738	6.3	1.0	0.6	49	27	24	

See explanatory information and SOURCE at end of table.

**Table A-24. Company and other (except Federal) R&D funds as a percent of net sales in R&D-performing companies, by industry, by size of company, and ranked by size of company-financed R&D program: 1995**

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Industry	SIC code	Company and other R&D funds as a percent of net sales			Company and other R&D funds		
		First 4 companies	Next 4 companies	Next 12 companies	First 4 companies	Next 4 companies	Next 12 companies
		[Percent]			[Dollars in millions]		
Health services.....	80	5.6%	6.3%	2.9%	(D)	\$20	\$23
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	5.6	4.9	3.4	(D)	19	16
Other health services.....	802-805,808-809	2.1	1.4	2.7	\$9	2	(D)
Engineering and management services.....	87	5.5	8.4	3.6	621	208	408
Engineering, architectural, and surveying.....	871	2.4	22.0	34.1	411	57	82
Research, development, and testing.....	873	98.4	7.9	93.5	364	193	364
Other engineering and management services.....	872,874	0.6	0.1	0.0	16	3	0
Other services.....	701,72,75-79,81, 83,84,89	0.7	1.7	0.7	100	20	23
Other nonmanufacturing industries .....	07-12,14,15, 161-162,17	1.7	0.8	0.3	191	39	28

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

**NOTE:** Rankings were based on total (company, Federal, and other) R&D funds.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

**Table A-25. Federal R&D funds as a percent of net sales in R&D-performing companies, by industry, by size of company, and ranked by size of federally-financed R&D program: 1995**

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Industry	SIC code	Federal R&D funds as a percent of net sales			Federal R&D funds		
		First 4 companies	Next 4 companies	Next 12 companies	First 4 companies	Next 4 companies	Next 12 companies
		[Percent]			[Dollars in millions]		
All Industries.....		4.8%	11.8%	4.1%	\$8,182	\$4,433	\$6,321
Manufacturing.....		4.8	8.0	3.6	8,182	4,361	4,831
Food, kindred, and tobacco products.....	20,21	0.0	0.0	0.0	0	0	0
Textiles and apparel.....	22,23	11.2	0.0	0.0	(D)	0	0
Lumber, wood products, and furniture.....	24,25	9.7	0.0	0.0	(D)	0	0
Paper and allied products.....	26	0.2	0.0	0.0	(D)	0	0
Chemicals and allied products.....	28	1.0	0.1	0.0	171 (S)	14	10
Industrial chemicals.....	281-82,286	1.0	0.1	0.0	171 (S)	14	4
Drugs and medicines.....	283	0.1	0.0	0.0	4	2	1
Other chemicals.....	284-85,287-89	1.0	0.0	0.0	(D)	0	0
Petroleum refining and extraction.....	13,29	0.0	0.0	0.0	6	0	0
Rubber products.....	30	1.8	0.0	0.0	(D)	0	0
Stone, clay, and glass products.....	32	0.6	0.0	0.0	6	(D)	0
Primary metals.....	33	0.1	0.0	0.0	12	1	0
Ferrous metals and products.....	331-32,3398-99	0.1	0.0	0.0	(D)	0	0
Nonferrous metals and products.....	333-36	0.1	0.0	0.0	(D)	0	0
Fabricated metal products.....	34	1.0	0.1	0.7	75	8	1
Machinery.....	35	0.2	0.3	0.4	49	25	13
Office, computing, and accounting machines.....	357	0.4	0.1	0.0	23	(D)	0
Other machinery, except electrical.....	351-56,358-59	0.2	0.2	0.4	49	12	3
Electrical equipment.....	36	2.1	0.5	0.4	1,567	45	29
Radio and TV receiving equipment.....	365	0.6	0.0	0.0	(D)	0	0
Communication equipment.....	366	15.7	4.7	0.7	(D)	5	(D)
Electronic components.....	367	2.8	4.0	0.7	(D)	12	10
Other electrical equipment.....	361-64,369	0.8	0.2	0.0	(D)	3	1

See explanatory information and SOURCE at end of table.

**Table A-25. Federal R&D funds as a percent of net sales in R&D-performing companies, by industry, by size of company, and ranked by size of federally-financed R&D program: 1995**

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Industry	SIC code	Federal R&D funds as a percent of net sales			Federal R&D funds			
		First 4 companies	Next 4 companies	Next 12 companies	First 4 companies	Next 4 companies	Next 12 companies	
		[Percent]			[Dollars in millions]			
Transportation equipment.....	37	4.5%	6.4%	1.5%	\$7,670	\$3,862	\$1,591	
Motor vehicles and motor vehicles equipment.....	371	0.5	0.0	0.0	(D)	0	0	
Other transportation equipment.....	373-75,379	2.4	0.0	0.0	(D)	0	0	
Aircraft and missiles.....	372,376	16.6	5.1	4.4	7,520	3,159	783	
Professional and scientific instruments.....	38	13.6	2.6	5.5	2,776 (S)	510	110	
Scientific and mechanical measuring instruments.....	381-82	13.6	4.7	2.3	2,776 (S)	459	74	
Optical, surgical, photographic, and other instruments.....	384-87	1.0	0.4	0.1	96	6	0	
Other manufacturing industries.....	27,31,39	0.1	0.0	0.0	(D)	0	0	
Nonmanufacturing.....		7.1	2.7	1.0	2,225	264	408	
79	Transportation and utilities.....	40-42,44-49	0.2	0.5	0.0	217	32	(D)
Communications.....	48	0.1	0.0	0.0	(D)	0	0	
Telephone communications.....	481	0.1	0.0	0.0	(D)	0	0	
Other communications.....	482-484,489	0.0	0.0	0.0	0	0	0	
Electric, gas, and sanitary services.....	49	0.8	0.0	0.0	89	4	(D)	
Other transportation and utilities.....	40-42,44-47	3.9	0.0	0.0	(D)	0	0	
Trade.....	50-59	0.2	0.0	0.0	(D)	0	0	
Finance, insurance, and real estate.....	60-65,67	0.2	0.0	0.0	(D)	0	0	
Services.....	701,72,73,75-81, 83,84,87,89	15.2	36.4	5.8	(D)	188	330	
Business services.....	73	15.7	38.9	1.6	112	40	48	
Computer and data processing services.....	737	15.7	36.3	1.1	112	38	35	
Other business services.....	731-736,738	19.3	0.0	0.0	17	0	0	

See explanatory information and SOURCE at end of table.

**Table A-25. Federal R&D funds as a percent of net sales in R&D-performing companies, by industry, by size of company, and ranked by size of federally-financed R&D program: 1995**

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Industry	SIC code	Federal R&D funds as a percent of net sales			Federal R&D funds		
		First 4 companies	Next 4 companies	Next 12 companies	First 4 companies	Next 4 companies	Next 12 companies
		[Percent]			[Dollars in millions]		
Health services.....	80	0.0%	0.0%	0.0%	\$3	\$0	\$0
Offices and clinics of medical doctors, hospitals, medical and dental labs....	801,806,807	0.0	0.0	0.0	2	0	0
Other health services.....	802-805,808-809	0.7	0.0	0.0	(D)	0	0
Engineering and management services.....	87	15.2	55.1	5.5	(D)	179	292
Engineering, architectural, and surveying.....	871	10.0	2.9	31.4	(D)	143	187
Research, development, and testing.....	873	43.5	34.1	24.8	(D)	70	78
Other engineering and management services.....	872,874	39.4	0.0	0.0	(D)	0	0
Other services.....	701,72,75-79,81, 83,84,89	0.4	2.1	0.0	4	(D)	0
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	0.2	0.0	0.0	11	0	0

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.  
(S) = Indicates imputation of more than 50 percent.

**NOTE:** Rankings were based on total (company, Federal, and other) R&D funds.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

**Table A-26. Total (company, Federal, and other) funds for performance of basic research, applied research, and development, in current and in constant dollars: 1953-95**

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Year	Total		Basic research		Applied research		Development	
	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars
	[Dollars in millions]							
1953 1/.....	\$3,630	\$17,988	\$151	\$748	\$726	\$3,598	\$2,753	\$13,642
1954 1/.....	4,070	19,941	166	813	814	3,988	3,090	15,140
1955 1/.....	4,640	22,372	189	911	928	4,474	3,523	16,986
1956.....	6,605	30,764	253	1,178	1,268	5,906	5,084	23,680
1957.....	7,731	34,856	271	1,222	1,670	7,529	5,790	26,105
1958.....	8,389	36,940	295	1,299	1,911	8,415	6,183	27,226
1959.....	9,618	41,908	320	1,394	1,991	8,675	7,307	31,839
1960.....	10,509	45,161	376	1,616	2,029	8,719	8,104	34,826
1961.....	10,908	46,338	395	1,678	1,977	8,398	8,536	36,262
1962.....	11,464	48,087	488	2,047	2,449	10,273	8,527	35,768
1963.....	12,630	52,363	522	2,164	2,457	10,187	9,651	40,012
1964.....	13,512	55,196	549	2,243	2,600	10,621	10,363	42,333
1965.....	14,185	56,831	592	2,372	2,658	10,649	10,935	43,810
1966.....	15,548	60,569	624	2,431	2,843	11,075	12,081	47,063
1967.....	16,385	61,854	629	2,374	2,915	11,004	12,841	48,475
1968.....	17,429	63,057	642	2,323	3,124	11,302	13,663	49,432
1969.....	18,308	63,262	618	2,135	3,287	11,358	14,403	49,768
1970.....	18,067	59,275	602	1,975	3,427	11,243	14,038	46,056
1971.....	18,320	57,143	590	1,840	3,415	10,652	14,315	44,651
1972.....	19,552	58,504	593	1,774	3,514	10,515	15,445	46,215
1973.....	21,249	60,195	631	1,788	3,825	10,836	16,793	47,572
1974.....	22,887	59,493	699	1,817	4,288	11,146	17,900	46,530
1975.....	24,187	57,465	730	1,734	4,570	10,858	18,887	44,873
1976.....	26,997	60,599	819	1,838	5,112	11,475	21,066	47,286
1977.....	29,825	62,882	911	1,921	5,636	11,883	23,278	49,079
1978 1/.....	33,304	65,443	1,035	2,034	6,300	12,380	25,969	51,030
1979.....	38,226	69,212	1,158	2,097	7,225	13,082	29,843	54,034
1980 1/.....	44,505	73,769	1,325	2,196	8,450	14,006	34,730	57,567
1981.....	51,810	78,488	1,614	2,445	10,699	16,208	39,497	59,835
1982 1/.....	58,650	83,583	1,904	2,713	12,323	17,562	44,423	63,308
1983.....	65,268	89,213	2,223	3,039	13,927	19,036	49,118	67,138
1984.....	74,800	98,525	2,608	3,435	15,765	20,765	56,427	74,324
1985.....	84,239	107,270	2,862	3,644	18,255	23,246	63,122	80,379
1986.....	87,823	108,989	4,047	5,022	19,759	24,521	64,017	79,445
1987.....	92,155	110,950	4,324	5,206	19,813	23,854	68,018	81,890
1988.....	97,015	112,690	4,500	5,227	20,748	24,100	71,767	83,363
1989.....	102,055	113,748	5,216	5,814	22,691	25,291	74,148	82,644

See explanatory information and SOURCE at end of table.

**Table A-26. Total (company, Federal, and other) funds for performance of basic research, applied research, and development, in current and in constant dollars: 1953-95**

Page 2 of 2

Year	Total		Basic research		Applied research		Development	
	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars
	[Dollars in millions]							
1990.....	\$109,727	\$117,230	\$5,128	\$5,479	\$24,785	\$26,480	\$79,814	\$85,271
1991.....	116,952	120,173	7,837	8,053	27,446	28,202	81,669	69,446
1992.....	119,110	119,110	7,002	7,002	26,168	26,168	85,940	85,940
1993.....	117,400	114,380	6,919	6,741	24,686	24,051	85,796	83,589
1994.....	119,595	113,802	7,017	6,677	23,490	22,352	89,088	84,773
1995.....	132,103	122,590	6,099	5,660	27,454	25,477	98,552	91,455

1/ Character-of-work estimates were made by the National Science Foundation. See: NSF, *National Patterns of R&D Resources: 1996*, Final Report, NSF 96-333.

**NOTES:** The character-of-work estimation procedure was revised for 1986 and later years; hence, these data are not directly comparable with data for 1985 and earlier years. See technical notes for discussion of this change.

The 1992 gross domestic product (GDP) implicit price deflators were used to convert current dollars to constant dollars.

As a result of a new sample design, statistics for 1988-91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

**Table A-27. Company and other (except Federal) funds for performance of basic research, applied research, and development, in current and in constant dollars: 1953-95**

Page 1 of 2

Year	Total		Basic research		Applied research		Development	
	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars
	[Dollars in millions]							
1953 1/.....	\$2,200	\$10,902	\$132	\$654	\$438	\$2,170	\$1,630	\$8,077
1954 1/.....	2,320	11,367	143	701	492	2,411	1,685	8,256
1955 1/.....	2,460	11,861	162	781	560	2,700	1,738	8,380
1956.....	3,277	15,263	216	1,006	794	3,698	2,267	10,559
1957.....	3,396	15,311	230	1,037	992	4,472	2,174	9,802
1958.....	3,630	15,984	252	1,110	1,137	5,007	2,241	9,868
1959.....	3,983	17,355	248	1,081	1,178	5,133	2,557	11,142
1960.....	4,428	19,029	297	1,276	1,196	5,140	2,935	12,613
1961.....	4,668	19,830	314	1,334	1,165	4,949	3,189	13,547
1962.....	5,029	21,095	345	1,447	1,438	6,032	3,246	13,616
1963.....	5,360	22,222	375	1,555	1,450	6,012	3,535	14,656
1964.....	5,792	23,660	384	1,569	1,560	6,373	3,848	15,719
1965.....	6,445	25,821	406	1,627	1,620	6,490	4,419	17,704
1966.....	7,216	28,111	451	1,757	1,804	7,028	4,961	19,326
1967.....	8,020	30,276	427	1,612	1,849	6,980	5,744	21,684
1968.....	8,869	32,088	462	1,671	2,081	7,529	6,326	22,887
1969.....	9,857	34,060	458	1,583	2,272	7,851	7,127	24,627
1970.....	10,288	33,753	444	1,457	2,378	7,802	7,466	24,495
1971.....	10,654	33,231	456	1,422	2,441	7,614	7,757	24,195
1972.....	11,535	34,515	463	1,385	2,562	7,666	8,510	25,464
1973.....	13,104	37,122	499	1,414	2,832	8,023	9,773	27,686
1974.....	14,667	38,126	536	1,393	3,263	8,482	10,868	28,251
1975.....	15,582	37,021	573	1,361	3,440	8,173	11,569	27,486
1976.....	17,436	39,138	634	1,423	3,912	8,781	12,890	28,934
1977.....	19,340	40,776	701	1,478	4,311	9,089	14,328	30,209
1978 1/.....	22,115	43,456	785	1,543	4,870	9,570	16,460	32,344
1979.....	25,708	46,547	893	1,617	5,670	10,266	19,145	34,664
1980 1/.....	30,476	50,515	1,035	1,716	6,550	10,857	22,891	37,943
1981.....	35,428	53,671	1,313	1,989	8,359	12,663	25,756	39,018
1982 1/.....	40,105	57,154	1,523	2,170	9,363	13,343	29,219	41,640
1983.....	44,588	60,946	1,760	2,406	10,286	14,060	32,542	44,481
1984.....	51,404	67,708	2,132	2,808	11,541	15,202	37,731	49,698
1985.....	57,043	72,638	2,373	3,022	12,908	16,437	41,762	53,180
1986.....	59,932	74,376	3,496	4,339	15,082	18,717	41,354	51,320
1987.....	61,403	73,926	3,583	4,314	15,153	18,243	42,667	51,369
1988.....	66,672	77,445	3,507	4,074	16,531	19,202	46,634	54,169
1989.....	73,501	81,923	3,832	4,271	17,993	20,055	51,676	57,597

See explanatory information and SOURCE at end of table.

**Table A-27. Company and other (except Federal) funds for performance of basic research, applied research, and development, in current and in constant dollars: 1953-95**

Page 2 of 2

Year	Total		Basic research		Applied research		Development	
	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars
	[Dollars in millions]							
1990.....	\$81,602	\$87,182	\$3,760	\$4,017	\$18,432	\$19,692	\$59,410	\$63,472
1991.....	90,580	93,074	6,125	6,294	21,425	22,015	63,030	69,446
1992.....	94,388	94,388	5,816	5,816	21,184	21,184	67,385	67,385
1993.....	94,591	92,158	5,961	5,808	19,956	19,443	68,678	66,912
1994.....	97,131	92,426	6,078	5,784	19,372	18,434	71,683	68,211
1995.....	108,652	100,828	5,379	4,992	23,755	22,044	79,516	73,790

1/ Character-of-work estimates were made by the National Science Foundation. See: NSF, *National Patterns of R&D Resources: 1996*, Final Report, NSF 96-333.

**NOTES:** The character-of-work estimation procedure was revised for 1986 and later years; hence, these data are not directly comparable with data for 1985 and earlier years. See technical notes for discussion of this change.

The 1992 gross domestic product (GDP) implicit price deflators were used to convert current dollars to constant dollars.

As a result of a new sample design, statistics for 1988-91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

**Table A-28. Federal funds for performance of basic research, applied research, and development,  
in current and in constant dollars: 1953-95**

Page 1 of 2

Year	Total		Basic research		Applied research		Development	
	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars
	[Dollars in millions]							
1953 1/.....	\$1,430	\$7,086	\$19	\$94	\$288	\$1,427	\$1,123	\$5,565
1954 1/.....	1,750	8,574	23	113	322	1,578	1,405	6,884
1955 1/.....	2,180	10,511	27	130	368	1,774	1,785	8,607
1956.....	3,328	15,501	37	172	474	2,208	2,817	1,992
1957.....	4,335	19,545	41	185	678	3,057	3,616	16,303
1958.....	4,759	20,956	43	189	774	3,408	3,942	17,358
1959.....	5,635	24,553	72	314	813	3,542	4,750	20,697
1960.....	6,081	26,132	79	339	833	3,580	5,169	22,213
1961.....	6,240	26,508	81	344	812	3,449	5,347	22,715
1962.....	6,434	26,988	143	600	1,011	4,241	5,281	22,152
1963.....	7,270	30,141	147	609	1,007	4,175	6,116	25,357
1964.....	7,720	31,536	165	674	1,040	4,248	6,515	26,614
1965.....	7,740	31,010	186	745	1,038	4,159	6,516	26,106
1966.....	8,332	32,458	173	674	1,039	4,048	7,120	27,737
1967.....	8,365	31,578	202	763	1,066	4,024	7,097	26,791
1968.....	8,560	30,970	180	651	1,043	3,774	7,337	26,545
1969.....	\$8,451	29,202	160	553	1,015	3,507	7,276	25,142
1970.....	7,779	25,522	158	518	1,049	3,442	6,572	21,562
1971.....	7,666	23,911	134	418	974	3,038	6,558	20,455
1972.....	8,017	23,989	130	389	952	2,849	6,935	20,751
1973.....	8,145	23,074	132	374	993	2,813	7,020	19,887
1974.....	8,220	21,367	163	424	1,025	2,664	7,032	18,279
1975.....	8,605	20,444	157	373	1,130	2,685	7,318	17,387
1976.....	9,561	21,461	185	415	1,200	2,694	8,176	18,352
1977.....	10,485	22,106	210	443	1,325	2,794	8,950	18,870
1978 1/.....	11,189	21,987	250	491	1,430	2,810	9,509	18,685
1979.....	12,518	22,665	265	480	1,555	2,815	10,698	19,370
1980 1/.....	14,029	23,254	290	481	1,900	3,149	11,839	19,624
1981.....	16,382	24,817	301	456	2,340	3,545	13,741	20,817
1982 1/.....	18,545	26,429	381	543	2,960	4,218	15,204	21,667
1983.....	20,680	28,267	463	633	3,641	4,977	16,576	22,657
1984.....	23,396	30,817	476	627	4,224	5,564	18,696	24,626
1985.....	27,196	34,631	489	623	5,347	6,809	21,360	27,200
1986.....	27,891	34,613	551	684	4,678	5,805	22,662	28,124
1987.....	30,752	37,024	740	891	4,660	5,610	25,352	30,523
1988.....	30,343	35,246	993	1,153	4,217	4,898	25,133	29,194
1989.....	28,554	31,826	1,384	1,543	4,698	5,236	22,472	25,047

See explanatory information and SOURCE at end of table.

**Table A-28. Federal funds for performance of basic research, applied research, and development,  
in current and in constant dollars: 1953–95**

Page 2 of 2

Year	Total		Basic research		Applied research		Development	
	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars
	[Dollars in millions]							
1990.....	\$28,125	\$30,048	\$1,368	\$1,462	\$6,353	\$6,787	\$20,404	\$21,799
1991.....	26,372	27,098	1,712	1,759	6,021	6,187	18,639	69,446
1992.....	24,722	24,722	1,186	1,186	4,983	4,983	18,555	18,555
1993.....	22,809	22,222	958	933	4,730	4,608	17,118	16,678
1994.....	22,463	21,375	939	894	4,119	3,919	17,405	16,562
1995.....	23,451	21,762	720	668	3,699	3,433	19,031	17,661

1/ Character-of-work estimates were made by the National Science Foundation. See: NSF, *National Patterns of R&D Resources: 1996*, Final Report, NSF 96-333.

**NOTES:** The character-of-work estimation procedure was revised for 1986 and later years; hence, these data are not directly comparable with data for 1985 and earlier years. See technical notes for discussion of this change.

The 1992 gross domestic product (GDP) implicit price deflators were used to convert current dollars to constant dollars.

As a result of a new sample design, statistics for 1988–91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-29. Funds for performance of basic research, applied research, and development, by industry and source of funds: 1993

Page 1 of 3

Industry	SIC code	Total			Basic Research			Applied Research			Development		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
		[Dollars in millions]											
All Industries.....		\$117,400	\$22,809	\$94,591	\$6,919	\$958	\$5,961	\$24,686	\$4,730	\$19,956	\$85,796	\$17,118	\$68,678
Manufacturing.....		86,569	16,669	69,901	4,637	287	4,349	18,184	2,196	15,988	63,749	14,183	49,566
Food, kindred, and tobacco products .....	20,21	1,345	0	1,345	96	0	96	434	0	434	814	0	814
Textiles and apparel.....	22,23	(D)	(D)	286	(D)	(D)	44	(D)	(D)	34	(D)	(D)	208
Lumber, wood products, and furniture.....	24,25	(D)	(D)	196	(D)	(D)	15	48	0	48	(D)	(D)	133
Paper and allied products.....	26	(D)	(D)	1,191	(D)	(D)	197	(D)	(D)	537	459	0	459
Chemicals and allied products.....	28	(D)	(D)	16,658	2,276	12	2,264	(D)	(D)	5,810	(D)	(D)	8,584
Industrial chemicals.....	281-82,286	(D)	(D)	5,165	(D)	(D)	918	(D)	(D)	1,266	(D)	(D)	2,981
Drugs and medicines.....	283	9,146	15	9,132	(D)	(D)	(D)	3,768	8	3,760	(D)	(D)	(D)
Other chemicals.....	284-85,287-89	(D)	(D)	2,361	(D)	(D)	(D)	(D)	(D)	783	(D)	(D)	(D)
Petroleum refining and extraction.....	13,29	2,152	14	2,138	(D)	(D)	(D)	(D)	(D)	(D)	1,084	11	1,073
Rubber products.....	30	(D)	(D)	1,059	29	0	29	(D)	(D)	160	(D)	(D)	870
Stone, clay, and glass products.....	32	538	9	529	(D)	(D)	54	(D)	(D)	180	302	7	295
Primary metals.....	33	669	23	646	(D)	(D)	47	217	6 (S)	211	(D)	(D)	388
Ferrous metals and products.....	331-32, 3398-99	289	17	272	(D)	(D)	21	(D)	(D)	86	(D)	(D)	165
Nonferrous metals and products.....	333-36	380	6	374	25	0	25	(D)	(D)	125 (S)	(D)	(D)	223
Fabricated metal products.....	34	1,158	222	936	(D)	(D)	96	189	8	182	(D)	(D)	659
Machinery.....	35	8,381	86	8,295	(D)	(D)	283	(D)	(D)	1,616	6,461	65	6,396
Office, computing, and accounting machines.....	357	4,950	33	4,917	(D)	(D)	92	(D)	(D)	950	3,903	28	3,875
Other machinery, except electrical.....	351-56,358-59	3,431	53	3,378	(D)	(D)	191	(D)	(D)	666	2,557	37	2,521
Electrical equipment.....	36	13,349	1,667	11,682	(D)	(D)	364	(D)	(D)	2,904	9,819	1,403	8,422
Radio and TV receiving equipment.....	365	(D)	(D)	87	10	0	10	(D)	(D)	12	(D)	(D)	64
Communication equipment.....	366	(D)	(D)	3,954	(D)	(D)	576	0	576	(D)	(D)	(D)	

See explanatory information and SOURCE at end of table

Table A-29. Funds for performance of basic research, applied research, and development, by industry and source of funds: 1993

Page 2 of 3

Industry	SIC code	Total			Basic Research			Applied Research			Development			
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	
		[Dollars in millions]												
Electronic components.....	367	\$5,311	\$206	\$5,105	(D)	\$1	(D)	\$1,429	\$35	(S)	\$1,394	(D)	\$170	(D)
Other electrical equipment.....	361-64,369	(D)	(D)	2,537	(D)	(D)	\$113	(D)	(D)	919	(D)	(D)	(D)	\$1,504
Transportation equipment.....	37	27,258	10,617	16,640	(D)	(D)	136	2,008	905	1,103	(D)	(D)	(D)	15,401
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	10,659	(D)	(D)	74	(D)	(D)	462	(D)	(D)	(D)	10,123
Other transportation equipment.....	373-75,379	(D)	(D)	297	(D)	0	(D)	(D)	(D)	12	(D)	(D)	(D)	(D)
Aircraft and missiles.....	372,376	15,056	9,372	5,684	(D)	(D)	1,453	825	628	(D)	(D)	(D)	(D)	(D)
Professional and scientific instruments.....	38	10,119	2,577	7,542	(D)	(D)	402	2,093	297	1,796	(D)	(D)	(D)	5,344
Scientific and mechanical measuring instruments.....	381-82	5,681	2,484	3,196	(D)	(D)	136	1,405	276	1,129	(D)	(D)	(D)	1,933
Optical, surgical, photographic, and other instruments.....	384-87	4,438	92	4,346	(D)	(D)	267	689	21	668	(D)	(D)	(D)	3,411
Other manufacturing industries.....	27,31,39	(D)	(D)	758	(D)	(D)	147	84	0	84	(D)	(D)	(D)	527
Nonmanufacturing 1/ .....	30,831	6,140	24,690	\$2,282	670	1,612	6,502	2,534	3,967	\$22,047	2,935	19,112		
Transportation and utilities.....	40-42,44-49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Communications.....	48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Telephone communications...	481	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other communications.....	482-484,489	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Electric, gas, and sanitary services.....	49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other transportation and utilities.....	40-42,44-47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trade.....	50-59	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Finance, insurance, and real estate.....	60-65,67	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Services.....	701,72,73, 75-81,83,84, 87,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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See explanatory information and SOURCE at end of table

Table A-29. Funds for performance of basic research, applied research, and development, by industry and source of funds: 1993

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Industry	SIC code	Total			Basic Research			Applied Research			Development		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
		[Dollars in millions]											
Business services.....	73	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Computer and data processing services.....	737	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other business services.....	731-736,738	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Health services.....	80	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other health services.....	802-805, 808-809	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Engineering and management services.....	87	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Engineering, architectural, and surveying.....	871	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Research, development, and testing.....	873	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other engineering and management services.....	872,874	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other services.....	701,72,75-79, 81,83,84,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

1/ Until 1995, data were not broken down below this level of detail for most nonmanufacturing industries.

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

NA = Not available.

NOTE: The character-of-work estimation procedure was revised for 1986 and later years; hence, these data are not directly comparable with data for 1985 and earlier years. See technical notes for a more complete discussion of this change.

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1993

Table A-30. Funds for performance of basic research, applied research, and development, by industry and source of funds: 1995

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Industry	SIC code	Total			Basic Research			Applied Research			Development		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
		[Dollars in millions]											
All Industries.....		\$119,595	\$22,463	\$97,131	\$7,017	\$939	\$6,078	\$23,490	\$4,119	\$19,372	\$89,088	\$17,405	\$71,683
Manufacturing.....		119,595	22,463	97,131	7,017	939	6,078	23,490	4,119	19,372	89,088	17,405	71,683
Food, kindred, and tobacco products.....	20,21	1,476	0	1,476	114	0	114	473	0	473	889	0	889
Textiles and apparel.....	22,23	(D)	(D)	316	(D)	(D)	42	(D)	(D)	47	(D)	(D)	228
Lumber, wood products, and furniture.....	24,25	(D)	(D)	201	(D)	(D)	27	(D)	(D)	43	(D)	(D)	131
Paper and allied products.....	26	(D)	(D)	1,263	(D)	(D)	211	(D)	(D)	619	433	0	433
Chemicals and allied products.....	28	(D)	(D)	16,559	2,608	9	2,599	(D)	(D)	5,386	9,186	610	8,575
Industrial chemicals.....	281-82,286	(D)	(D)	4,780	(D)	(D)	1,066	(D)	(D)	(D)	(D)	(D)	(D)
Drugs and medicines.....	283	9,633	8	9,625	(D)	1	(D)	3,333	5	3,328	(D)	2	(D)
Other chemicals.....	284-85,287-89	(D)	(D)	2,154	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Petroleum refining and extraction.....	13,29	1,950	10	1,939	(D)	0	(D)	694	5	688	(D)	5	(D)
Rubber products.....	30	(D)	(D)	1,432	33	0	33	(D)	(D)	215	1,184	0	1,184
Stone, clay, and glass products.....	32	591	38	553	50	0	50	212	37	175	329	1	328
Primary metals.....	33	690	17	672	(D)	(D)	102	(D)	(D)	206	(D)	(D)	364
Ferrous metals and products.....	331-32	(D)	(D)	241	(D)	(D)	19	(D)	(D)	84	(D)	(D)	138
Nonferrous metals and products.....	3398-99	(D)	(D)	431	83	0	83	(D)	(D)	122	(D)	(D)	226
Fabricated metal products.....	34	1,111	243	868	(D)	(D)	78	(D)	(D)	184	833	226	606
Machinery.....	35	8,110	99	8,011	261	7	254	1,464	35	1,429	6,385	56	6,328
Office, computing, and accounting machines.....	357	4,106	28	4,078	(D)	(D)	62	(D)	(D)	713	3,316	13	3,303
Other machinery, except electrical.....	351-56,358-59	4,004	71	3,933	(D)	(D)	192	(D)	(D)	716	3,068	43	3,025
Electrical equipment.....	36	15,338	1,801	13,537	(D)	(D)	388	(D)	(D)	2,597	12,203	1,653 (S)	10,550
Radio and TV receiving equipment.....	365	(D)	(D)	64	(D)	(D)	(D)	(D)	0	(D)	36	1	35
Communication equipment.....	366	(D)	(D)	4,939	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	4,111

See explanatory information and SOURCE at end of table.

Table A-30. Funds for performance of basic research, applied research, and development, by industry and source of funds: 1995

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Industry	SIC code	Total			Basic Research			Applied Research			Development		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
		[Dollars in millions]											
Electronic components.....	367	\$6,032	\$162	\$5,870	(D)	(D)	\$121	(D)	(D)	\$1,370	\$4,529	\$150	\$4,379
Other electrical equipment.....	361-64,369	(D)	(D)	2,664	(D)	(D)	118	(D)	(D)	521	(D)	(D)	2,025
Transportation equipment.....	37	28,087	10,392	17,695	\$244	\$109	136	\$2,044	\$784	(S)	1,259	25,799	9,499
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	11,950	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other transportation equipment.....	373-75,379	(D)	(D)	279	31	0	31	(D)	(D)	(D)	(D)	(D)	(D)
Aircraft and missiles.....	372,376	14,260	8,794	5,466	(D)	(D)	(D)	(D)	(D)	(D)	12,787	7,978	4,809
Professional and scientific instruments.....	38	11,441	3,384	8,058	(D)	(D)	467	2,086	299	1,787	(D)	(D)	5,803
Scientific and mechanical measuring instruments.....	381-82	6,952	3,266	3,687	(D)	(D)	197	1,409	271	1,138	(D)	(D)	2,351
Optical, surgical, photographic, and other instruments.....	384-87	4,489	118	4,371	(D)	(D)	270	677	28	649	(D)	(D)	3,452
Other manufacturing industries.....	27,31,39	(D)	(D)	796	(D)	(D)	93	129	0	129	(D)	(D)	574
Nonmanufacturing 1/.....		28,846	5,090	23,756	2,036	689	1,346	6,169	2,035	4,134	20,641	2,366 (S)	18,275
Transportation and utilities.....	40-42,44-49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Communications.....	48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Telephone communications....	481	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other communications.....	482-484,489	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Electric, gas, and sanitary services.....	49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other transportation and utilities..	40-42,44-47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trade.....	50-59	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Finance, insurance, and real estate.....	60-65,67	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Services.....	701,72,73, 75-81,83, 84,87,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See explanatory information and SOURCE at end of table.

Table A-30. Funds for performance of basic research, applied research, and development, by industry and source of funds: 1995

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Industry	SIC code	Total			Basic Research			Applied Research			Development		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
		[Dollars in millions]											
Business services.....	73	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Computer and data processing services.....	737	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other business services.....	731-736,738	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Health services.....	80	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other health services.....	802-805, 808-809	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Engineering and management services.....	87	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Engineering, architectural, and surveying.....	871	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Research, development, and testing.....	873	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other engineering and management services.....	872,874	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other services.....	701,72,75-79, 81,83,84,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

1/ Until 1995, data were not broken down below this level of detail for most nonmanufacturing industries.

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

NA = Not available.

NOTE: The character-of-work estimation procedure was revised for 1986 and later years; hence, these data are not directly comparable with data for 1985 and earlier years. See technical notes for a more complete discussion of this change.

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-31. Funds for performance of basic research, applied research, and development, by industry and source of funds: 1995

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Industry	SIC code	Total			Basic Research			Applied Research			Development		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
		[Dollars in millions]											
All Industries.....		\$132,103	\$23,451	\$108,652	\$6,099	\$720	\$5,379	\$27,454	\$3,699	\$23,755	\$98,552	\$19,031	\$79,516
Manufacturing.....		100,067	18,831	81,236	3,849	290	3,559	20,416	2,140	18,276	75,804	16,399	59,401
Food, kindred, and tobacco products.....	20,21	1566	0	1566	153	0	153	510	0	510	903	0	903
Textiles and apparel.....	22,23	(D)	(D)	381	29	0	29	(D)	(D)	49	(D)	(D)	303
Lumber, wood products, and furniture.....	24,25	(D)	(D)	229	21	0	21	38	0	38	(D)	(D)	169
Paper and allied products.....	26	(D)	(D)	1,404	245 (S)	0	245 (S)	(D)	(D)	720 (S)	439	0	439
Chemicals and allied products.....	28	17,547	210 (S)	17,337	(D)	(D)	1,616	(D)	(D)	5,666	10,241	187 (S)	10,055
Industrial chemicals.....	281-82,286	(D)	(D)	5,139	(D)	(D)	514	(D)	(D)	1,437	(D)	(D)	3,188
Drugs and medicines.....	283	10,215	14	10,202	1,018	2	1,016	3,513	5	3,508	5,683	7	5,677
Other chemicals.....	284-85, 287-89	(D)	(D)	1,996	(D)	(D)	86	(D)	(D)	720	(D)	(D)	1,190
Petroleum refining and extraction.....	13,29	1,760	6	1,754	115	0	115	(D)	(D)	719	(D)	(D)	920
Rubber products.....	30	(D)	(D)	1,210	67	0	67	(D)	(D)	229	(D)	(D)	915
Stone, clay, and glass products.....	32	448	6	441	17	0	17	(D)	(D)	151	(D)	(D)	273
Primary metals.....	33	593	13	580	47	0	47	(D)	(D)	184	(D)	(D)	349
Ferrous metals and products.....	331-32, 3398-99	(D)	(D)	217	14	0	14	85	0	85	(D)	(D)	118
Nonferrous metals and products.....	333-36	(D)	(D)	363	33	0	33	(D)	(D)	100	235	5	231
Fabricated metal products.....	34	1,023	86	937	(D)	(D)	68	156	13	143	(D)	(D)	726
Machinery.....	35	(D)	(D)	9,676	(D)	(D)	261	2,431	29	2,402	7,067	54	7,012
Office, computing, and accounting machines.....	357	(D)	(D)	4,699	(D)	(D)	24	(D)	(D)	1,323	(D)	(D)	3,352 (S)
Other machinery, except electrical.....	351-56, 358-59	5,041	64	4,976	(D)	(D)	238	(D)	(D)	1,079	(D)	(D)	3,660

See explanatory information and SOURCE at end of table.

Table A-31. Funds for performance of basic research, applied research, and development, by industry and source of funds: 1995

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Industry	SIC code	Total			Basic Research			Applied Research			Development			
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	
		[Dollars in millions]												
Electrical equipment.....	36	\$18,751	\$1,690	\$17,060	(D)	(D)	\$240	\$3,882	(D)	(D)	\$3,279	\$14,612	\$1,070	\$13,541
Radio and TV receiving equipment.....	365	(D)	(D)	114	5	0	5	16	\$0	16	(D)	(D)	(D)	94
Communication equipment.....	366	(D)	(D)	3,845	56	0	56	(D)	(D)	664	3,644	519	3,125	
Electronic components.....	367	(D)	(D)	9,628	(D)	(D)	88	2,435	430	2,005	7,705	169	7,535	
Other electrical equipment.....	361-64,369	(D)	(D)	3,473	(D)	(D)	91	(D)	(D)	595	(D)	(D)	2,787	
Transportation equipment.....	37	32,441	13,130	19,311	348	250	98	2,791	705	2,086	29,302	12,175	17,127	
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	13,590	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	12,885
Other transportation equipment.....	373-75,379	(D)	(D)	232	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	179
Aircraft and missiles.....	372,376	16,951	11,462	5,489	252	250	2	1,987	564	1,423	14,712	10,648	4,064	
Professional and scientific instruments.....	38	11,976	3,460 (S)	8,516	(D)	(D)	499	(D)	(D)	2,015	8,812	2,810 (S)	6,002	
Scientific and mechanical measuring instruments.....	381-82	7,146	3,358 (S)	3,787	(D)	(D)	257	(D)	(D)	1,406	(D)	(D)	2,125	
Optical, surgical, photographic, and other instruments.....	384-87	4,831	102	4,729	(D)	(D)	242	634	24	610	(D)	(D)	3,877	
Other manufacturing industries.....	27,31,39	(D)	(D)	835	(D)	(D)	83	84	0	84	668	0	668	
Nonmanufacturing.....	32,036	4,620	27,415	2,250	430	1,820	7,038	1,558	5,480	22,748	2,632	20,115		
Transportation and utilities.....	40-42, 44-49	5,435	252	5,183	(D)	(D)	116	(D)	(D)	953	4,359	245	4,114	
Communications.....	48	(D)	(D)	4,756	(D)	0	(D)	(D)	0	(D)	(D)	(D)	3,852	
Telephone communications.....	481	(D)	(D)	4,697	(D)	0	(D)	(D)	0	(D)	(D)	(D)	3,809	
Other communications....	482-484,489	59	0	59	(D)	0	(D)	(D)	0	(D)	43	0	43	

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See explanatory information and SOURCE at end of table.

Table A-31. Funds for performance of basic research, applied research, and development, by industry and source of funds: 1995

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Industry	SIC code	Total			Basic Research			Applied Research			Development		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
		[Dollars in millions]											
Electric, gas, and sanitary services.....	49	\$440	\$93	\$347	(D)	(D)	\$48	(D)	(D)	\$105	\$280	\$86	\$194
Other transportation and utilities.....	40-42, 44-47	(D)	(D)	80	(D)	\$0	(D)	(D)	(D)	(D)	(D)	(D)	68
Trade.....	50-59	(D)	(D)	7,514	(D)	(D)	211	(D)	(D)	1,236	(D)	(D)	6,067
Finance, insurance, and real estate.....	60-65,67	(D)	(D)	710	(D)	(D)	115	(D)	(D)	17	(D)	(D)	578
Services.....	701,72,73, 75-81,83, 84,87,89	17,876	4,270	13,606	\$1,766	420	1,346	\$4,658	\$1,537	3,122	11,452	2,312	9,138
Business services.....	73	9,293	612	8,681	(D)	(D)	(D)	(D)	(D)	(D)	6,972	276	6,695
Computer and data processing services..	737	9,059	514	8,545	(D)	(D)	569	(D)	(D)	1,376	6,796	196	6,600
Other business services.....	731-736, 738	234	98	136	(D)	(D)	(D)	(D)	(D)	(D)	175	80	95
Health services.....	80	756	4	753	(D)	(D)	(D)	237	2	235	(D)	(D)	(D)
Offices and clinics of medical doctors, hospital, medical, and dental labs.....	801,806, 807	(D)	(D)	737	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other health services....	802-805, 808-809	(D)	(D)	16 (S)	1	(D)	(D)	(D)	(D)	(D)	7	0	7
Engineering and management services....	87	7,662	3,650	4,011	(D)	(D)	(D)	(D)	(D)	(D)	3,887	2,034 (S)	1,852
Engineering, architectural, and surveying.....	871	2,933	1,883	1,050	(D)	(D)	(D)	(D)	(D)	(D)	1,519	1,079	440

See explanatory information and SOURCE at end of table.

Table A-31. Funds for performance of basic research, applied research, and development, by industry and source of funds: 1995

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Industry	SIC Code	Total			Basic Research			Applied Research			Development		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
		[Dollars in millions]											
Research, development, and testing.....	873	(D)	(D)	\$2,829	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	\$1,287
Other engineering and management services.....	872,874	(D)	(D)	132	(D)	(D)	\$7	(D)	(D)	\$0	(D)	(D)	125
Other services.....	701,72, 75-79,81, 83,84,89	\$165	\$4	160	(D)	(D)	(D)	\$29	\$3	26	(D)	(D)	(D)
Other nonmanufacturing industries.....	07-12,14, 15,161-162, 17	413	11	402	\$32	\$0	32	(D)	(D)	153	(D)	(D)	217

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

**NOTE:** The character-of-work estimation procedure was revised for 1986 and later years; hence, these data are not directly comparable with data for 1985 and earlier years. See technical notes for a more complete discussion of this change.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-32. Number of companies conducting basic research and total number of R&amp;D-performing companies, by industry and size of company: 1995

Page 1 of 3

Industry	SIC code	Total		Size of company											
				Fewer than 500 employees		500 to 999 employees		1,000 to 4,999 employees		5,000 to 9,999 employees		10,000 to 24,999 employees		25,000 or more employees	
		Total	Basic	Total	Basic	Total	Basic	Total	Basic	Total	Basic	Total	Basic	Total	Basic
All Industries.....		33,314	8,884	30,284	8,326	1,235	200	1,217	214	274	62	172	43	131	38
Manufacturing.....		17,537	3,961	15,400	3,546	794	146	955	172	179	38	131	35	78	24
Food, kindred, and tobacco products.....	20,21	780	211	629	185	45	4	72	10	12	6	12	4	10	2
Textiles and apparel.....	22,23	623	14	527	1	41	1	38	7	6	1	9	3	2	1
Lumber, wood products, and furniture.....	24,25	690	155	610	138	31	10	40	6	7	1	1	0	1	0
Paper and allied products.....	26	239	29	160	12	17	3	41	8	7	1	9	4	6	1
Chemicals and allied products.....	28	1,600	490	1,386	433	59	12	89	27	39	6	19	8	8	4
Industrial chemicals.....	281-82,286	386	134	304	106	36	7	29	13	5	2	9	4	3	2
Drugs and medicines.....	283	339	106	288	93	10	2	26	6	3	0	8	3	4	2
Other chemicals.....	284-85,287-89	875	250	794	234	13	3	34	8	31	4	2	1	1	0
Petroleum refining and extraction.....	13,29	54	11	28	1	1	0	10	3	2	1	9	4	4	2
Rubber products.....	30	920	151	769	120	75	20	61	10	8	0	4	0	2	1
Stone, clay, and glass products.....	32	399	39	344	28	26	2	22	5	3	1	4	3	0	0
Primary metals.....	33	258	31	150	19	36	4	50	4	14	3	5	0	3	1
Ferrous metals and products.....	331-32,3398-99	73	16	17	5	11	4	30	4	12	3	2	0	1	0
Nonferrous metals and products.....	333-36	185	15	132	14	25	0	20	0	2	0	3	0	2	1
Fabricated metal products.....	34	1,392	379	1,233	346	68	19	69	9	8	3	14	2	0	0
Machinery.....	35	3,937	1,190	3,613	1,153	131	11	150	19	22	2	15	4	6	1
Office, computing, and accounting machines.....	357	426	104	377	99	15	1	25	3	6	0	2	0	1	1
Other machinery, except electrical.....	351-56,358-59	3,511	1,086	3,236	1,054	116	10	125	16	16	2	13	4	5	0
Electrical equipment.....	36	2,475	287	2,195	257	111	7	133	15	15	5	9	0	12	4
Radio and TV receiving equipment.....	365	84	7	75	6	3	0	6	1	0	0	0	0	0	0
Communication equipment.....	366	466	55	404	47	32	3	24	4	2	0	2	0	2	1
Electronic components.....	367	893	75	786	63	39	3	56	6	7	2	2	0	3	1
Other electrical equipment.....	361-64,369	1,032	151	930	141	37	1	47	4	6	3	5	0	7	2

See explanatory information and SOURCE at end of table.

Table A-32. Number of companies conducting basic research and total number of R&amp;D-performing companies, by industry and size of company: 1995

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Industry	SIC code	Total		Size of company												
				Fewer than 500 employees		500 to 999 employees		1,000 to 4,999 employees		5,000 to 9,999 employees		10,000 to 24,999 employees		25,000 or more employees		
		Total	Basic	Total	Basic	Total	Basic	Total	Basic	Total	Basic	Total	Basic	Total	Basic	
Transportation equipment.....	37	599	259	462	202	35	24	63	26	15	3	9	0	15	4	
Motor vehicles and motor vehicles equipment.....	371	483	234	390	183	29	23	46	25	9	2	5	0	4	1	
Other transportation equipment.....	373-75,379	31	1	14	0	3	1	9	0	0	0	3	0	2	0	
Aircraft and missiles.....	372,376	85	24	58	19	3	0	8	1	6	1	1	0	9	3	
Professional and scientific instruments.....	38	2,663	515	2,489	473	89	25	68	10	9	5	2	0	6	2	
Scientific and mechanical measuring instruments.....	381-82	1,731	268	1,667	257	33	5	23	4	3	1	1	0	4	1	
Optical, surgical, photographic, and other instruments.....	384-87	933	247	823	216	56	20	45	6	6	4	1	0	2	1	
Other manufacturing industries.....	27,31,39	908	201	805	179	30	5	48	13	11	0	10	3	3	1	
Nonmanufacturing.....		15,777	4,923	14,884	4,780	441	54	262	43	95	24	41	8	53	14	
86	Transportation and utilities.....	40-42,44-49	249	53	123	33	2	0	70	7	18	5	15	4	21	4
	Communications.....	48	99	4	58	2	2	0	27	1	1	0	0	0	11	1
	Telephone communications.....	481	63	1	25	0	0	0	25	0	1	0	0	0	11	1
	Other communications.....	482-484,489	37	3	32	2	2	0	2	1	0	0	0	0	0	0
	Electric, gas, and sanitary services....	49	132	46	64	32	0	0	38	5	16	5	13	4	2	0
	Other transportation and utilities.....	40-42,44-47	18	4	2	0	0	0	5	1	1	0	2	0	8	3
	Trade.....	50-59	5,727	1,938	5,593	1,901	22	3	52	10	40	18	5	0	15	6
	Finance, insurance, and real estate.....	60-65,67	169	105	74	67	57	35	15	2	16	0	2	0	5	1
	Services.....	701,72,73,75-81,83,84,87,89	8,286	2,565	8,034	2,525	100	15	109	18	17	1	16	4	10	2
	Business services.....	73	4,266	1,097	4,106	1,079	68	8	68	8	10	1	7	0	7	1
	Computer and data processing services.....	737	3,557	769	3,429	756	56	7	57	6	7	0	5	0	3	0
	Other business services.....	731-736,738	709	328	677	323	12	1	11	2	3	1	2	0	4	1

See explanatory information and SOURCE at end of table.

Table A-32. Number of companies conducting basic research and total number of R&amp;D-performing companies, by industry and size of company: 1995

Page 3 of 3

Industry	SIC code	Total		Size of company											
				Fewer than 500 employees		500 to 999 employees		1,000 to 4,999 employees		5,000 to 9,999 employees		10,000 to 24,999 employees		25,000 or more employees	
		Total	Basic	Total	Basic	Total	Basic	Total	Basic	Total	Basic	Total	Basic	Total	Basic
Health services.....	80	1,055	200	1,036	194	6	0	9	3	0	0	3	2	1	1
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	745	197	730	193	6	0	5	2	0	0	2	1	1	1
Other health services.....	802-805, 808-809	310	3	306	1	0	0	3	1	0	0	1	1	0	0
Engineering and management services.....	87	2,666	1,261	2,613	1,249	22	6	24	6	3	0	3	1	1	0
Engineering, architectural, and surveying.....	871	1,052	344	1,013	335	15	3	20	6	2	0	1	0	1	0
Research, development, and testing.....	873	1,333	891	1,324	889	6	2	2	0	0	0	1	0	0	0
Other engineering and management services.....	872,874	281	27	276	25	1	1	2	0	1	0	1	1	0	0
Other services.....	701,72,75-79, 81,83,84,89	300	7	279	4	4	1	8	1	4	0	3	1	1	0
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	1,344	261	1,059	254	259	1	16	5	5	0	3	0	2	1

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-33. Funds for industrial applied R&amp;D performance, by product field and source of funds: 1995

Page 1 of 2

Product field	SIC code	Total	Federal	Company
		[Dollars in millions]		
Total.....		\$52,260	\$4,862	\$47,398
Food and kindred products.....	20	893	(D)	(D)
Textile mill products.....	22	188	(D)	(D)
Chemicals and allied products.....	28	10,172	28	10,144
Industrial inorganic and organic chemicals.....	281,286	798	3	795
Plastics materials and synthetic resins, rubber, and fibers.....	282	1,311	9	1,302
Drugs and medicines.....	283	6,343	8	6,335
Agricultural chemicals.....	287	643	(D)	(D)
Other chemicals.....	284-85,289	1,077	(D)	(D)
Petroleum refining.....	29	798	13	785
Rubber and miscellaneous plastics products.....	30	598	(D)	(D)
Stone, clay, and glass products.....	32	177	5	172
Primary metals.....	33	253	21	232
Ferrous metals and products.....	331-32,3398-99	137	(D)	(D)
Nonferrous metals and products.....	333-36	115	(D)	(D)
Fabricated metal products.....	34	695	337	358
Ordnance and accessories, n.e.c.....	348	(D)	(D)	(D)
Other fabricated metal products.....	341-47,349	(D)	(D)	(D)
Machinery.....	35	7,404	167	7,237
Engines and turbines.....	351	1,660	156	1,504
Farm machinery and equipment.....	352	249	0	249
Construction, mining, and materials handling machinery.....	353	482	(D)	(D)
Metalworking machinery and equipment.....	354	103	(D)	(D)
Office, computing, and accounting machines....	357	4,392	(D)	(D)
Other machinery, except electrical.....	355-56,358-59	517	(D)	(D)
Electrical equipment.....	36	10,048	1,182	8,866
Electric transmission and distribution equipment.....	361,3825	166	(D)	(D)
Electrical industrial apparatus.....	362	155	26	129
Radio and TV receiving equipment.....	365	90	(D)	(D)
Communication equipment.....	366	5,084	741	4,343
Electronic components.....	367	3,819	382	3,437
Other electrical equipment and supplies.....	363-64,368-69	733	(D)	(D)
Transportation equipment.....	37	9,690	1,390	8,300
Motor vehicles and equipment.....	371	7,254	(D)	(D)
Other transportation equipment.....	373-75,379	(D)	(D)	(D)
Aircraft and parts.....	372	(D)	(D)	(D)
Guided missiles and spacecraft.....	376	788	693	95
Professional and scientific instruments.....	38, except 3825	2,030	401	1,629
Scientific and mechanical measuring instruments.....	381-82	1,071	(D)	(D)
Optical, surgical, photographic, and other instruments.....	383-87	958	(D)	(D)

See explanatory information and SOURCE at end of table.

**Table A-33. Funds for industrial applied R&D performance, by product field and source of funds: 1995**

Page 2 of 2

Product field	SIC code	Total	Federal	Company
		[Dollars in millions]		
Lumber and wood products.....	24	\$26	\$0	\$26
Paper and allied products.....	26	276	(D)	(D)
Leather.....	31	11	0	11
Software.....	737	4,577	57	4,520
Other product fields, n.e.c.....	-	4,424	1,252	3,172

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

n.e.c = Not elsewhere classified.

**NOTE:** Imputation of R&D expenditures by product field was eliminated beginning in 1985. This table, therefore, contains only applied research and development data reported by survey respondents who received form RD-1L. See Table A-34 for coverage ratios showing the percentage of each industry's applied research and development funds that respondents distributed by product field.**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-34. Total (company, Federal, and other) funds for applied R&amp;D performance, by industry, size of company, and product field: 1995

Page 1 of 6

Industry and size of company	SIC code	Coverage ratio	Applied R&D Total	Food and kindred products	Textile mill products	Paper and allied products	Chemicals	Petroleum refining	Rubber products
				20	22	26		28	30
[Dollars in millions]									
All Industries.....		0.53	\$52,260	\$893	\$188	\$276	\$10,172	\$798	\$598
Distribution by industry:									
Manufacturing.....		0.54	41,060	703	(D)	(D)	9,109	678	(D)
Food, kindred, and tobacco products.....	20,21	0.70	884	573	(D)	(D)	44	(D)	(D)
Textiles and apparel.....	22,23	0.23	102	(D)	78	0	5	(D)	(D)
Lumber, wood products, and furniture.....	24,25	0.23	61	0	0	0	0	0	(D)
Paper and allied products.....	26	0.71	292	(D)	(D)	140	45	0	15
Chemicals and allied products.....	28	0.75	9,488	97	(D)	(D)	8,396	47	22
Industrial chemicals.....	281-82,286	0.61	3,001	(D)	(D)	(D)	2,522	(D)	(D)
Drugs and medicines.....	283	0.87	5,254	(D)	(D)	(D)	4,899	0	(D)
Other chemicals.....	284-85,287-89	0.72	1,234	64	(D)	(D)	975	(D)	(D)
Petroleum refining and extraction.....	13,29	0.82	1,149	0	(D)	0	317	612	57
Rubber products.....	30	0.43	579	(D)	(D)	(D)	66	(D)	434
Stone, clay, and glass products.....	32	0.36	226	0	(D)	0	73	0	(D)
Primary metals.....	33	0.73	243	(D)	0	0	4	(D)	(D)
Ferrous metals and products.....	331-32,3398-99	0.79	166	(D)	0	0	3	(D)	(D)
Nonferrous metals and products.....	333-36	0.66	76	0	0	0	1	0	(D)
Fabricated metal products.....	34	0.49	594	(D)	(D)	(D)	7	0	20
Machinery.....	35	0.52	3,989	11	(D)	0	15	(D)	(D)
Office, computing, and accounting machines.....	357	0.41	1,485	0	0	0	0	0	0
Other machinery, except electrical.....	351-56,358-59	0.62	2,504	11	(D)	0	15	(D)	(D)
Electrical equipment.....	36	0.41	5,024	(D)	0	(D)	72	(D)	8
Radio and TV receiving equipment.....	365	0.20	19	0	0	0	0	0	0
Communication equipment.....	366	0.27	992	0	0	0	0	0	0
Electronic components.....	367	0.35	1,863	0	0	(D)	2	0	(D)
Other electrical equipment.....	361-64,369	0.65	2,149	(D)	0	(D)	69	(D)	(D)

See explanatory information and SOURCE at end of table.

Table A-34. Total (company, Federal, and other) funds for applied R&amp;D performance, by industry, size of company, and product field: 1995

Page 2 of 6

Industry and size of company	SIC code	Coverage ratio	Applied R&D Total	Food and kindred products	Textile mill products	Paper and allied products	Chemicals	Petroleum refining	Rubber products
				20	22	26			
[Dollars in millions]									
Distribution by industry:									
Transportation equipment.....	37	0.62	\$15,270	\$0	(D)	0	\$3	(D)	(D)
Motor vehicles and motor vehicles equipment.....	371	0.97	(D)	0	\$0	\$0	2	\$0	\$0
Other transportation equipment.....	373-75,379	0.85	(D)	0	0	0	0	0	0
Aircraft and missiles.....	372,376	0.26	5,490	0	(D)	0	1	(D)	(D)
Professional and scientific instruments.....	38	0.26	2,825	0	0	0	55	0	(D)
Scientific and mechanical measuring instruments.....	381-82	0.27	1,831	0	0	0	0	0	(D)
Optical, surgical, photographic, and other instruments.....	384-87	0.24	993	0	0	0	55	0	(D)
Other manufacturing industries.....	27,31,39	0.54	334	0	(D)	8	6	0	(D)
Nonmanufacturing .....		0.52	11,199	190	(D)	(D)	1,062	119	(D)
103 Transportation and utilities.....	40-42,44-49	0.79	4,226	0	0	0	0	0	0
Communications.....	48	0.80	(D)	0	0	0	0	0	0
Telephone communications.....	481	0.80	(D)	0	0	0	0	0	0
Other communications.....	482-484,489	0.26	(D)	0	0	0	0	0	0
Electric, gas, and sanitary services.....	49	0.71	199	0	0	0	0	0	0
Other transportation and utilities.....	40-42,44-47	0.68	(D)	0	0	0	0	0	0
Trade.....	50-59	0.70	4,029	113	(D)	(D)	74	(D)	(D)
Finance, insurance, and real estate.....	60-65,67	0.22	(D)	0	0	0	0	0	0
Services.....	701,72,73,75-81,83,84,87,89	0.32	2,749	(D)	(D)	0	982	(D)	0
Business services.....	73	0.36	1,068	0	0	0	0	0	0
Computer and data processing services.....	737	0.37	1,050	0	0	0	0	0	0
Other business services.....	731-736,738	0.13	18	0	0	0	0	0	0

See explanatory information and SOURCE at end of table.

Table A-34. Total (company, Federal, and other) funds for applied R&amp;D performance, by industry, size of company, and product field: 1995

Page 3 of 6

Industry and size of company	SIC code	Coverage ratio	Applied R&D Total	Food and kindred products	Textile mill products	Paper and allied products	Chemicals	Petroleum refining	Rubber products
				20	22	26			
[Dollars in millions]									
Distribution by industry:									
Health services.....	80	0.76	(D)	(D)	\$0	\$0	\$459	\$0	\$0
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	0.77	(D)	(D)	0	0	459	0	0
Other health services.....	802-805,808-809	0.07	(D)	\$0	0	0	0	0	0
Engineering and management services.....	87	0.19	\$1,043	(D)	(D)	0	519	(D)	0
Engineering, architectural, and surveying.....	871	0.15	(D)	0	0	0	0	(D)	0
Research, development, and testing.....	873	0.21	817	(D)	(D)	0	519	(D)	0
Other engineering and management services.....	872,874	0.10	(D)	0	0	0	0	0	0
Other services.....	701,72,75-79, 81,83,84,89	0.65	(D)	0	0	0	4	0	0
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	0.43	185	(D)	0	(D)	5	(D)	(D)
Distribution by size of company: [Number of employees]									
Total.....		1.00	52,260	893	188	276	10,172	798	598
Fewer than 500.....		0.19	2,556	25	(D)	(D)	694	11	15
500 to 999.....		0.46	1,446	87	14	7	157	(D)	(D)
1,000 to 4,999.....		0.59	7,630	187	54	52	2,175	4	82
5,000 to 9,999.....		0.62	5,345	155	(D)	23	995	(D)	29
10,000 to 24,999.....		0.47	5,492	139	(D)	52	2,823	418	68
25,000 or more.....		0.64	29,790	299	88	(D)	3,328	302	(D)

See explanatory information and SOURCE at end of table.

Table A-34. Total (company, Federal, and other) funds for applied R&amp;D performance, by industry, size of company, and product field: 1995

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Industry and size of company	SIC code	Stone, clay and glass products	Primary metals	Fabricated metal products	Machinery	Electrical equipment	Transpor- tation equipment	Professional and scientific instruments	Other product fields n.e.c.
		32	33	34	35	36	37	38	...
[Dollars in millions]									
All Industries.....		\$177	\$253	\$695	\$7,404	\$10,048	\$9,690	\$2,030	\$9,038
Distribution by industry:									
Manufacturing.....		(D)	250	(D)	4,291	5,478	9,584	1,955	7,118
Food, kindred, and tobacco products.....	20,21	0	0	0	8	2	0	0	(D)
Textiles and apparel.....	22,23	0	0	0	4	0	0	0	8
Lumber, wood products, and furniture.....	24,25	0	2	0	0	1	3	0	(D)
Paper and allied products.....	26	(D)	0	(D)	5	0	0	11	67
Chemicals and allied products.....	28	8	18	(D)	17	73	23	326	269
Industrial chemicals.....	281-82,286	(D)	10	0	13	63	8	124	121
Drugs and medicines.....	283	(D)	1	(D)	3	1	0	202	117
Other chemicals.....	284-85,287-89	(D)	7	(D)	2	9	16	0	30
Petroleum refining and extraction.....	13,29	(D)	1	(D)	20	9	0	34	58
Rubber products.....	30	(D)	0	2	2	10	27	3	(D)
Stone, clay, and glass products.....	32	110	0	0	3	2	34	0	4
Primary metals.....	33	0	176	16	4	13	10	1	(D)
Ferrous metals and products.....	331-32,3398-99	0	129	7	3	2	8	0	0
Nonferrous metals and products.....	333-36	0	46	9	1	11	2	1	(D)
Fabricated metal products.....	34	(D)	7	294	91	11	26	5	128
Machinery.....	35	(D)	3	67	2,821	282	231	86	449
Office, computing, and accounting machines.....	357	0	0	(D)	1,268	187	0	0	(D)
Other machinery, except electrical.....	35-56,358-59	(D)	3	(D)	1,553	95	231	86	(D)
Electrical equipment.....	36	(D)	1	(D)	155	3,362	973	72	250
Radio and TV receiving equipment.....	365	0	0	0	0	12	0	1	6
Communication equipment.....	366	0	0	0	1	954	14	4	19
Electronic components.....	367	0	0	(D)	24	1,741	0	13	(D)
Other electrical equipment.....	361-64,369	(D)	1	(D)	129	654	959	55	(D)

See explanatory information and SOURCE at end of table.

Table A-34. Total (company, Federal, and other) funds for applied R&amp;D performance, by industry, size of company, and product field: 1995

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Industry and size of company	SIC code	Stone, clay and glass products	Primary metals	Fabricated metal products	Machinery	Electrical equipment	Transpor- tation equipment	Professional and scientific instruments	Other product fields n.e.c.	
		32	33	34	35	36	37	38	...	
[Dollars in millions]										
Distribution by industry:										
Transportation equipment.....	37	(D)	\$42	(D)	\$961	\$1,242	\$8,062	\$75	\$4,721	
Motor vehicles and motor vehicles equipment.....	371	\$0	0	(D)	499	337	7,242	0	(D)	
Other transportation equipment.....	373-75,379	0	36	\$0	0	0	29	0	(D)	
Aircraft and missiles.....	372,376	(D)	6	(D)	463	905	792	75	(D)	
Professional and scientific instruments.....	38	(D)	1	21	198	437	194	1,341	567	
Scientific and mechanical measuring instruments.....	381-82	(D)	0	14	197	390	185	831	214	
Optical, surgical, photographic, and other instruments.....	384-87	(D)	1	7	1	47	9	510	353	
Other manufacturing industries.....	27,31,39	0	1	(D)	2	34	1	0	264	
Nonmanufacturing.....		(D)	2	(D)	3,114	4,570	107	74	1,921	
106	Transportation and utilities.....	40-42,44-49	0	0	(D)	508	3,415	16	(D)	279
Communications.....	48	0	0	0	503	3,378	0	0	(D)	
Telephone communications.....	481	0	0	0	503	3,378	0	0	(D)	
Other communications.....	482-484,489	0	0	0	0	0	0	0	(D)	
Electric, gas, and sanitary services.....	49	0	0	(D)	5	37	8	(D)	141	
Other transportation and utilities.....	40-42,44-47	0	0	(D)	0	0	8	0	(D)	
Trade.....	50-59	(D)	0	(D)	2,511	1,021	33	19	251	
Finance, insurance, and real estate.....	60-65,67	0	0	0	0	0	0	0	(D)	
Services.....	701,72,73,75- 81,83,84,87,89	(D)	1	0	66	123	59	46	1,330	
Business services.....	73	0	0	0	14	57	0	19	978	
Computer and data processing services.....	737	0	0	0	14	54	0	(D)	(D)	
Other business services.....	731-736,738	0	0	0	0	2	0	(D)	(D)	

See explanatory information and SOURCE at end of table.

Table A-34. Total (company, Federal, and other) funds for applied R&amp;D performance, by industry, size of company, and product field: 1995

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Industry and size of company	SIC code	Stone, clay and glass products 32	Primary metals 33	Fabricated metal products 34	Machinery 35	Electrical equipment 36	Transpor- tation equipment 37	Professional and scientific instruments 38	Other product fields n.e.c. ...
		[Dollars in millions]							
Distribution by industry:									
Health services.....	80	(D)	\$0	\$0	\$0	\$34	\$10	\$5	(D)
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	(D)	0	0	0	34	10	5	(D)
Other health services.....	802-805,808-809	\$0	0	0	0	0	0	0	(D)
Engineering and management services.....	87	(D)	1	0	12	15	49	22	\$315
Engineering, architectural, and surveying.....	871	0	0	0	0	14	49	3	(D)
Research, development, and testing.....	873	(D)	1	0	12	1	0	19	188
Other engineering and management services.....	872,874	0	0	0	0	0	0	0	(D)
Other services.....	701,72,75-79, 81,83,84,89	0	0	0	40	18	0	0	(D)
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	(D)	1	(D)	29	11	0	0	(D)
Distribution by size of company: [Number of employees]									
Total.....	177	253	695	7,404	10,048	9,690	2,030	9,038	
Fewer than 500.....	(D)	7	(D)	244	691	75	281	473	
500 to 999.....	12	10	44	158	459	54	112	240	
1,000 to 4,999.....	22	59	137	1,133	1,935	489	452	848	
5,000 to 9,999.....	(D)	63	56	781	1,184	352	206	1,446	
10,000 to 24,999.....	(D)	87	125	475	172	204	253	551	
25,000 or more.....	(D)	26	(D)	4,613	5,606	8,516	726	5,479	

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

n.e.c. = Not elsewhere classified. Includes lumber and wood products (SIC 24) and Leather (SIC 31).

NOTE: Imputation of R&amp;D expenditures by product field was eliminated beginning in 1985. This table, therefore, contains only data reported by survey respondents who received form RD-1L.

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-35. Total (company, Federal, and other) funds for applied R&amp;D performance, by industry, size of company, and detailed product field: 1995

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Industry and size of company	SIC code	Chemicals					Primary metals		Fabricated metals		Computer programming, data processing, and other computer related services
		Industrial inorganic and organic chemicals 281,286	Plastics, synthetic resins, rubber, and fibers 282	Drugs and medicines 283	Agricultural chemicals 287	Other chemicals 284-85, 289	Ferrous metals and products 331-32	Nonferrous metal and products 333-36	Other fabricated metal products 341-47, 349	Ordnance and accessories n.e.c. 348	
		[Dollars in millions]									
Total.....		\$798	\$1,311	\$6,343	\$643	\$1,077	\$137	\$115	(D)	(D)	\$4,577
Distribution by industry:											
Manufacturing.....		782	1,294	5,351	(D)	1,047	(D)	(D)	(D)	(D)	320
Food, kindred, and tobacco products.....	20,21	(D)	(D)	(D)	3	(D)	0	0	0	0	0
Textiles and apparel.....	22,23	0	(D)	0	0	0	0	0	0	0	0
Lumber, wood products, and furniture.....	24,25	0	0	0	0	0	0	(D)	0	0	0
Paper and allied products.....	26	13	21	0	0	11	0	0	(D)	0	0
Chemicals and allied products.....	28	602	870	5,324	634	919	(D)	16	(D)	(D)	(D)
Industrial chemicals.....	281-82,286	450	836	(D)	482	175	0	(D)	0	(D)	0
Drugs and medicines.....	283	(D)	(D)	4,601	134	66	0	(D)	(D)	0	0
Other chemicals.....	284-85,287-89	(D)	(D)	(D)	18	677	(D)	(D)	(D)	(D)	(D)
Petroleum refining and extraction.....	13,29	87	151	0	0	(D)	0	(D)	(D)	0	(D)
Rubber products.....	30	(D)	64	(D)	0	(D)	0	(D)	2	0	(D)
Stone, clay, and glass products.....	32	(D)	(D)	0	(D)	(D)	0	0	0	0	0
Primary metals.....	33	(D)	(D)	(D)	0	(D)	129	47	16	0	0
Ferrous metals and products.....	331-32, 3398-99	(D)	(D)	0	0	(D)	129	(D)	7	0	0
Nonferrous metals and products.....	333-36	0	0	(D)	0	0	0	(D)	9	0	0
Fabricated metal products.....	34	0	7	0	0	0	(D)	(D)	99	9	0
Machinery.....	35	(D)	(D)	(D)	0	0	(D)	(D)	67	0	51
Office, computing, and accounting machines.....	357	0	0	0	0	0	0	(D)	0	(D)	0
Other machinery, except electrical....	351-56,358-59	(D)	(D)	(D)	0	0	(D)	(D)	0	(D)	0

See explanatory information and SOURCE at end of table.

Table A-35. Total (company, Federal, and other) funds for applied R&amp;D performance, by industry, size of company, and detailed product field: 1995

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Industry and size of company	SIC code	Chemicals					Primary metals		Fabricated metals		Computer programming, data processing, and other computer related services
		Industrial inorganic and organic chemicals 281,286	Plastics, synthetic resins, rubber, and fibers 282	Drugs and medicines 283	Agricultural chemicals 287	Other chemicals 284-85, 289	Ferrous metals and products 331-32 3398-99	Nonferrous metal and products 333-36	Other fabricated metal products 341-47, 349	Ordnance and accessories n.e.c. 348	
		[Dollars in millions]									
Distribution by industry:											
Electrical equipment.....	36	\$6	(D)	\$0	\$0	(D)	\$0	(D)	(D)	(D)	\$118
Radio and TV receiving equipment...	365	0	\$0	0	0	\$0	0	\$0	\$0	\$0	0
Communication equipment.....	366	(D)	0	0	0	0	0	0	0	0	(D)
Electronic components.....	367	0	(D)	0	0	(D)	0	0	(D)	0	(D)
Other electrical equipment.....	361-64,369	(D)	(D)	0	0	(D)	0	(D)	(D)	(D)	(D)
Transportation equipment.....	37	0	(D)	0	0	(D)	(D)	(D)	(D)	(D)	(D)
Motor vehicles and motor vehicles equipment.....	371	0	(D)	0	0	0	0	(D)	(D)	(D)	(D)
Other transportation equipment.....	373-75,379	0	0	0	0	0	0	(D)	0	0	0
Aircraft and missiles.....	372,376	0	(D)	0	0	(D)	(D)	(D)	(D)	(D)	(D)
Professional and scientific instruments..	38	(D)	48	5	0	1	(D)	(D)	21	(D)	21
Scientific and mechanical measuring instruments.....	381-82	(D)	0	0	0	0	0	0	14	(D)	6
Optical, surgical, photographic, and other instruments.....	384-87	(D)	48	5	0	1	(D)	(D)	7	0	15
Other manufacturing industries.....	27,31,39	(D)	(D)	0	0	0	0	(D)	(D)	0	47
Nonmanufacturing .....	16	17	992	(D)	30	(D)	(D)	(D)	(D)	(D)	4,257
Transportation and utilities.....	40-42,44-49	(D)	(D)	0	0	(D)	0	(D)	0	0	145
Communications.....	48	0	0	0	0	0	0	0	0	0	(D)
Telephone communications.....	481	0	0	0	0	0	0	0	0	0	(D)
Other communications.....	482-484,489	0	0	0	0	0	0	0	0	0	(D)
Electric, gas, and sanitary services...	49	(D)	(D)	0	0	0	(D)	0	(D)	0	(D)
Other transportation and utilities.....	40-42,44-47	0	0	0	0	0	0	0	(D)	0	16

See explanatory information and SOURCE at end of table.

Table A-35. Total (company, Federal, and other) funds for applied R&amp;D performance, by industry, size of company, and detailed product field: 1995

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Industry and size of company	SIC code	Chemicals					Primary metals		Fabricated metals		Computer programming, data processing, and other computer related services
		Industrial inorganic and organic chemicals 281,286	Plastics, synthetic resins, rubber, and fibers 282	Drugs and medicines 283	Agricultural chemicals 287	Other chemicals 284-85, 289	Ferrous metals and products 331-32 3398-99	Nonferrous metal and products 333-36	Other fabricated metal products 341-47, 349	Ordnance and accessories n.e.c. 348	
		[Dollars in millions]									
Distribution by industry:											
Trade.....	50-59	\$7	(D)	\$30	\$0	(D)	\$0	\$0	(D)	\$0	\$1,007
Finance, insurance, and real estate.....	60-65,67	0	\$0	0	0	\$0	0	0	\$0	0	106
Services.....	701,72,73, 75-81,83, 84,87,89	(D)	10	962	(D)	0	0	(D)	0	(D)	2,989
Business services.....	73	0	0	0	0	0	0	0	0	0	2,957
Computer and data processing services.....	737	0	0	0	0	0	0	0	0	0	(D)
Other business services.....	731-736,738	0	0	0	0	0	0	0	0	0	(D)
Health services.....	80	0	(D)	(D)	(D)	0	0	0	0	0	(D)
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	0	(D)	(D)	(D)	0	0	0	0	0	(D)
Other health services.....	802-805, 808-809	0	0	0	0	0	0	0	0	0	0
Engineering and management services.....	87	(D)	(D)	(D)	0	0	0	(D)	0	(D)	10
Engineering, architectural, and surveying.....	871	0	0	0	0	0	0	0	0	0	(D)
Research, development, and testing.....	873	(D)	(D)	(D)	0	0	0	(D)	0	(D)	(D)
Other engineering and management services.....	872,874	0	0	0	0	0	0	0	0	0	(D)
Other services.....	701,72,75-79, 81,83,84,89	0	(D)	0	0	0	0	0	0	0	(D)

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See explanatory information and SOURCE at end of table.

Table A-35. Total (company, Federal, and other) funds for applied R&amp;D performance, by industry, size of company, and detailed product field: 1995

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Industry and size of company	SIC code	Chemicals					Primary metals		Fabricated metals		Computer programming, data processing, and other computer related services
		Industrial inorganic and organic chemicals 281,286	Plastics, synthetic resins, rubber, and fibers 282	Drugs and medicines 283	Agricultural chemicals 287	Other chemicals 284-85, 289	Ferrous metals and products 331-32 3398-99	Nonferrous metal and products 333-36	Other fabricated metal products 341-47, 349	Ordnance and accessories n.e.c. 348	
		[Dollars in millions]									
Distribution by industry:											
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	(D)	(D)	\$0	\$0	(D)	\$0	(D)	(D)	\$0	(D)
Distribution by size of company: [Number of employees]											
Total.....		\$798	\$1,311	6,343	643	\$1,077	137	\$115	(D)	(D)	\$4,577
111											
Fewer than 500.....		35	31	591	10	(D)	(D)	5	(D)	(D)	268
500 to 999.....		31	20	(D)	(D)	29	(D)	7	32	(D)	537
1,000 to 4,999.....		234	190	1,503	41	197	9	51	99	(D)	1,012
5,000 to 9,999.....		60	63	(D)	109	164	62	(D)	39	(D)	452
10,000 to 24,999.....		214	412	1,783	(D)	\$227	(D)	50	90	(D)	1,060 (S)
25,000 or more.....		178	595	1,808	296	(D)	(D)	(D)	(D)	0	1,247

See explanatory information and SOURCE at end of table.

Table A-35. Total (company, Federal, and other) funds for applied R&amp;D performance, by industry, size of company, and detailed product field: 1995

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Industry and size of company	SIC code	Machinery						Electrical equipment			
		Engines and turbines 351	Farm machinery and equipment 352	Construction, mining, and materials handling machinery 353	Metal-working machinery and equipment 354	Office computing and accounting machines 357	Other machinery except electrical 355-56	Electric transmission and distribution equipment 361	Electrical industrial apparatus 362	Radio and television receiving sets except communication types 365	
		[Dollars in millions]									
All Industries.....		\$1,660	\$249	\$482	\$103	\$4,392	\$517	\$166	\$155	\$90	\$5,084
Distribution by industry:											
Manufacturing.....		1,648	(D)	454	(D)	1,336	513	154	152	(D)	1,585
Food, kindred, and tobacco products....	20,21	\$0	(D)	\$0	\$0	\$0	(D)	\$0	(D)	\$0	\$0
Textiles and apparel.....	22,23	0	\$0	0	(D)	0	(D)	0	(D)	0	0
Lumber, wood products, and furniture....	24,25	0	0	0	0	0	\$0	0	\$0	0	0
Paper and allied products.....	26	0	0	0	0	1	(D)	0	0	0	0
Chemicals and allied products.....	28	0	0	(D)	0	(D)	8	0	(D)	0	0
Industrial chemicals.....	281-82,286	0	0	(D)	0	0	(D)	0	0	0	0
Drugs and medicines.....	283	0	0	0	0	(D)	(D)	0	(D)	0	0
Other chemicals.....	284-85,287-89	0	0	0	0	0	(D)	0	0	0	0
112 Petroleum refining and extraction.....	13,29	0	0	0	0	(D)	(D)	0	0	0	0
Rubber products.....	30	0	0	(D)	(D)	0	(D)	0	0	0	0
Stone, clay, and glass products.....	32	0	0	0	(D)	0	0	0	0	0	0
Primary metals.....	33	0	(D)	(D)	(D)	0	(D)	(D)	(D)	0	(D)
Ferrous metals and products.....	331-32, 3398-99	0	(D)	(D)	(D)	0	(D)	0	(D)	0	0
Nonferrous metals and products.....	333-36	0	0	0	0	0	(D)	(D)	(D)	0	(D)
Fabricated metal products.....	34	(D)	(D)	(D)	4	(D)	10	(D)	(D)	0	(D)
Machinery.....	35	621	224	390	90	1,264	232	(D)	7	0	(D)
Office, computing, and accounting machines.....	357	0	0	0	0	1,264	(D)	(D)	0	0	(D)
Other machinery, except electrical...	351-56,358-59	621	224	390	90	0	(D)	0	7	0	(D)

See explanatory information and SOURCE at end of table.

Table A-35. Total (company, Federal, and other) funds for applied R&amp;D performance, by industry, size of company, and detailed product field: 1995

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Industry and size of company	SIC code	Machinery						Electrical equipment			
		Engines and turbines 351	Farm machinery and equipment 352	Construction, mining, and materials handling machinery 353	Metal-working machinery and equipment 354	Office computing and accounting machines 357	Other machinery except electrical 355-56	Electric transmission and distribution equipment 361	Electrical industrial apparatus 362	Radio and television receiving sets except communication types 365	Communications equipment 366
		[Dollars in millions]									
Distribution by industry:											
Electrical equipment.....	36	(D)	0	(D)	(D)	21	13	127	95	59	937
Radio and TV receiving equipment...	365	0	0	0	0	0	0	0	0	(D)	0
Communication equipment.....	366	0	0	0	(D)	(D)	0	(D)	(D)	0	860
Electronic components.....	367	0	0	(D)	(D)	(D)	0	0	(D)	(D)	45
Other electrical equipment.....	361-64,369	(D)	0	(D)	0	0	13	(D)	73	0	32
Transportation equipment.....	37	(D)	(D)	(D)	\$0	(D)	(D)	(D)	(D)	\$0	(D)
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	\$0	0	\$0	(D)	\$0	\$0	0	(D)
Other transportation equipment.....	373-75,379	\$0	\$0	0	0	0	\$0	0	0	0	\$0
Aircraft and missiles.....	372,376	(D)	0	(D)	0	(D)	14	(D)	(D)	0	(D)
Professional and scientific instruments..	38	0	0	0	0	0	(D)	(D)	(D)	(D)	35
Scientific and mechanical measuring instruments.....	381-82	0	0	0	0	0	(D)	(D)	(D)	(D)	35
Optical, surgical, photographic, and other instruments.....	384-87	0	0	0	0	0	(D)	0	(D)	0	0
Other manufacturing industries .....	27,31,39	0	0	0	(D)	(D)	(D)	(D)	0	0	0
Nonmanufacturing .....	12	(D)	29	(D)	3,056	5	13	3	(D)	3,499	
Transportation and utilities.....	40-42,44-49	(D)	(D)	0	(D)	(D)	(D)	13	(D)	0	(D)
Communications.....	48	0	0	0	0	(D)	0	0	0	0	(D)
Telephone communications.....	481	0	0	0	0	(D)	0	0	0	0	(D)
Other communications.....	482-484,489	0	0	0	0	0	0	0	0	0	0
Electric, gas, and sanitary services...	49	(D)	(D)	0	(D)	(D)	(D)	13	(D)	0	(D)
Other transportation and utilities.....	40-42,44-47	0	0	0	0	0	0	0	0	0	0

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See explanatory information and SOURCE at end of table.

Table A-35. Total (company, Federal, and other) funds for applied R&amp;D performance, by industry, size of company, and detailed product field: 1995

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Industry and size of company	SIC code	Machinery						Electrical equipment			
		Engines and turbines 351	Farm machinery and equipment 352	Construction, mining, and materials handling machinery 353	Metal-working machinery and equipment 354	Office computing and accounting machines 357	Other machinery except electrical 355-56 358-59	Electric transmission and distribution equipment 361	Electrical industrial apparatus 362	Radio and television receiving sets except communication types 365	Communications equipment 366
		[Dollars in millions]									
Distribution by industry:											
Trade.....	50-59	0	(D)	(D)	0	(D)	0	0	(D)	(D)	268
Finance, insurance, and real estate.....	60-65,67	0	0	0	0	0	0	0	0	0	0
Services.....	701,72,73, 75-81,83, 84,87,89	(D)	0	0	0	54	(D)	0	0	0	(D)
Business services.....	73	\$0	\$0	\$0	\$0	\$14	\$0	\$0	\$0	\$0	\$47
Computer and data processing services.....	737	0	0	0	0	14	0	0	0	0	47
Other business services.....	731-736,738	0	0	0	0	0	0	0	0	0	0
Health services.....	80	0	0	0	0	0	0	0	0	0	(D)
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	0	0	0	0	0	0	0	0	0	(D)
Other health services.....	802-805, 808-809	0	0	0	0	0	0	0	0	0	0
Engineering and management services.....	87	(D)	0	0	0	(D)	(D)	0	0	0	(D)
Engineering, architectural, and surveying.....	871	0	0	0	0	0	0	0	0	0	(D)
Research, development, and testing.....	873	(D)	0	0	0	(D)	(D)	0	0	0	0
Other engineering and management services.....	872,874	0	0	0	0	0	0	0	0	0	0
Other services.....	701,72,75-79, 81,83, 84, 89	(D)	0	0	0	(D)	0	0	0	0	(D)

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See explanatory information and SOURCE at end of table.

Table A-35. Total (company, Federal, and other) funds for applied R&amp;D performance, by industry, size of company, and detailed product field: 1995

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Industry and size of company	SIC code	Machinery						Electrical equipment			
		Engines and turbines 351	Farm machinery and equipment 352	Construction, mining, and materials handling machinery 353	Metal-working machinery and equipment 354	Office computing and accounting machines 357	Other machinery except electrical 355-56	Electric transmission and distribution equipment 361	Electrical industrial apparatus 362	Radio and television receiving sets except communication types 365	Communications equipment 366
		[Dollars in millions]									
Distribution by industry:											
Other nonmanufacturing industries.....	07-12,14,15,	0	0	(D)	0	0	(D)	0	0	0	0
Distribution by size of company: [Number of employees]											
Total.....		\$1,660	\$249	\$482	\$103	\$4,392	\$517	\$166	\$155	\$90	\$5,084
Fewer than 500.....		(D)	0	9	(D)	156	65	(D)	18	12	280
500 to 999.....		0	(D)	(D)	21	66	57	39	18	(D)	42
1,000 to 4,999.....		(D)	74	58	52	678	266	22	40	(D)	616
5,000 to 9,999.....		66	(D)	60	(D)	(D)	(D)	10	6	(D)	(D)
10,000 to 24,999.....		(D)	(D)	(D)	(D)	(D)	89	(D)	5	0	(D)
25,000 or more.....		1,220	(D)	331	0	2,880	(D)	(D)	68	0	3,845

See explanatory information and SOURCE at end of table.

Table A-35. Total (company, Federal, and other) funds for applied R&amp;D performance, by industry, size of company, and detailed product field: 1995

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Industry and size of company	SIC code	Electrical equipment		Transportation equipment			Professional and Scientific Instruments		
		Electronic components and accessories 367	Other electrical equipment and supplies 363-64, 368-69	Motor vehicles and equipment 371	Other transportation equipment 379	Aircraft and parts 372	Guided missiles and spacecraft 376	Scientific and mechanical measuring instruments 381-82	
		[Dollars in millions]							
All Industries.....		\$3,819	\$733	\$7,254	(D)	(D)	\$788	\$1,071	\$958
Distribution by industry:									
Manufacturing.....		2,813	684	7,239	\$168	(D)	(D)	1,049	907
Food, kindred, and tobacco products.....	20,21	0	0	0	0	\$0	0	0	0
Textiles and apparel.....	22,23	0	0	0	0	0	0	0	0
Lumber, wood products, and furniture.....	24,25	(D)	(D)	(D)	0	(D)	0	(D)	0
Paper and allied products.....	26	0	0	0	0	0	0	(D)	(D)
Chemicals and allied products.....	28	69	(D)	(D)	(D)	0	0	(D)	243
Industrial chemicals.....	281-82,286	(D)	0	(D)	(D)	0	0	0	(D)
Drugs and medicines.....	283	0	(D)	0	0	0	0	(D)	(D)
Other chemicals.....	284-85,287-89	(D)	(D)	(D)	0	0	0	0	0
Petroleum refining and extraction.....	13,29	(D)	0	0	0	0	0	0	(D)
Rubber products.....	30	7	(D)	(D)	(D)	(D)	(D)	0	(D)
Stone, clay, and glass products.....	32	(D)	0	(D)	0	0	0	0	0
Primary metals.....	33	(D)	(D)	9	(D)	0	0	(D)	0
Ferrous metals and products.....	331-32, 3398-99	(D)	(D)	(D)	(D)	0	0	0	0
Nonferrous metals and products.....	333-36	0	0	(D)	0	0	0	(D)	0
Fabricated metal products.....	34	(D)	8	25	(D)	0	0	(D)	(D)
Machinery.....	35	77	(D)	122	(D)	(D)	(D)	21	(D)
Office, computing, and accounting machines.....	357	43	(D)	0	0	0	0	0	0
Other machinery, except electrical.....	351-56,358-59	34	53	122	(D)	(D)	(D)	21	(D)

See explanatory information and SOURCE at end of table.

Table A-35. Total (company, Federal, and other) funds for applied R&amp;D performance, by industry, size of company, and detailed product field: 1995

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Industry and size of company	SIC code	Electrical equipment		Transportation equipment				Professional and Scientific Instruments	
		Electronic components and accessories	Other electrical equipment and supplies	Motor vehicles and equipment	Other transportation equipment	Aircraft and parts	Guided missiles and spacecraft	Scientific and mechanical measuring instruments	Optical, surgical photographic and other instruments
		367	363-64, 368-69	371	379	372	376	381-82	383-87
[Dollars in millions]									
Distribution by industry:									
Electrical equipment.....	36	\$1,850	\$294	(D)	(D)	(D)	\$0	\$49	\$23
Radio and TV receiving equipment.....	365	(D)	0	\$0	\$0	\$0	0	0	(D)
Communication equipment.....	366	(D)	(D)	0	(D)	(D)	0	4	(D)
Electronic components.....	367	1,619	(D)	0	0	0	0	10	(D)
Other electrical equipment.....	361-64,369	178	279	(D)	(D)	(D)	0	35	(D)
Transportation equipment.....	37	(D)	(D)	(D)	26	(D)	(D)	(D)	(D)
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	(D)	0	(D)	(D)	0	0
Other transportation equipment.....	373-75,379	0	0	(D)	(D)	0	0	0	0
Aircraft and missiles.....	372,376	(D)	(D)	(D)	(D)	(D)	60	(D)	(D)
11 Professional and scientific instruments.....	38	258	94	(D)	(D)	(D)	(D)	807	535
Scientific and mechanical measuring instruments.....	381-82	214	(D)	(D)	0	(D)	(D)	(D)	42
Optical, surgical, photographic, and other instruments.....	384-87	44	(D)	0	(D)	0	0	(D)	493
Other manufacturing industries.....	27,31,39	7	(D)	0	(D)	0	0	0	0
Nonmanufacturing .....		1,006	49	16	(D)	(D)	(D)	22	52
Transportation and utilities.....	40-42,44-49	(D)	(D)	5	10	(D)	(D)	(D)	(D)
Communications.....	48	(D)	0	0	0	0	0	0	0
Telephone communications.....	481	(D)	0	0	0	0	0	0	0
Other communications.....	482-484,489	0	0	0	0	0	0	0	0
Electric, gas, and sanitary services.....	49	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other transportation and utilities.....	40-42,44-47	0	(D)	(D)	(D)	0	0	0	0

See explanatory information and SOURCE at end of table.

Table A-35. Total (company, Federal, and other) funds for applied R&amp;D performance, by industry, size of company, and detailed product field: 1995

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Industry and size of company	SIC code	Electrical equipment		Transportation equipment				Professional and Scientific Instruments	
		Electronic components and accessories 367	Other electrical equipment and supplies 363-64, 368-69	Motor vehicles and equipment 371	Other transportation equipment 379	Aircraft and parts 372	Guided missiles and spacecraft 376	Scientific and mechanical measuring instruments 381-82	Optical, surgical photographic and other instruments 383-87
		[Dollars in millions]							
Distribution by industry:									
Trade.....	50-59	\$724	\$27	(D)	(D)	\$0	\$0	(D)	(D)
Finance, insurance, and real estate.....	60-65,67	0	0	\$0	\$0	0	0	\$0	\$0
Services.....	701,72,73, 75-81,83, 84,87,89	40	(D)	(D)	(D)	(D)	(D)	17	30
Business services.....	73	(D)	(D)	0	0	0	0	(D)	(D)
Computer and data processing services.....	737	(D)	0	0	0	0	0	(D)	(D)
Other business services.....	731-736,738	0	(D)	0	0	0	0	0	(D)
Health services.....	80	(D)	(D)	(D)	0	(D)	0	(D)	(D)
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	(D)	(D)	(D)	0	(D)	0	(D)	(D)
Other health services.....	802-805, 808-809	0	0	0	0	0	0	0	0
Engineering and management services.....	87	(D)	(D)	0	(D)	0	(D)	10	12
Engineering, architectural, and surveying.....	871	(D)	0	0	(D)	0	(D)	(D)	(D)
Research, development, and testing.....	873	(D)	(D)	0	0	0	0	(D)	(D)
Other engineering and management services.....	872,874	0	0	0	0	0	0	0	0
Other services.....	701,72,75-79, 81,83,84,89	(D)	0	0	0	0	0	0	0

See explanatory information and SOURCE at end of table.

Table A-35. Total (company, Federal, and other) funds for applied R&amp;D performance, by industry, size of company, and detailed product field: 1995

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Industry and size of company	SIC code	Electrical equipment		Transportation equipment				Professional and Scientific Instruments	
		Electronic components and accessories 367	Other electrical equipment and supplies 363-64, 368-69	Motor vehicles and equipment 371	Other transportation equipment 379	Aircraft and parts 372	Guided missiles and spacecraft 376	Scientific and mechanical measuring instruments 381-82	Optical, surgical photographic and other instruments 383-87
		[Dollars in millions]							
Distribution by industry:									
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	(D)	\$0	\$0	(D)	\$0	\$0	\$0	\$0
Distribution by size of company: [Number of employees]									
Total.....		\$3,819	733	7,254	(D)	1,430	788	1,071	958
11									
Fewer than 500.....		304	77	(D)	(D)	17	(D)	151	130
500 to 999.....		309	50	30	\$22	(D)	(D)	72	40
1,000 to 4,999.....		1,025	205	237	19	75	(D)	139	314
5,000 to 9,999.....		784	34	241	45	29	(D)	30	(D)
10,000 to 24,999.....		80	31	130	(D)	(D)	(D)	(D)	143
25,000 or more.....		1,317	336	(D)	(D)	(D)	(D)	(D)	(D)

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

NOTE: Imputation of R&D expenditures by product field was eliminated beginning in 1985. This table, therefore, contains only data reported by survey respondents who received form RD-1L. See table A-34 for coverage ratios showing the percentage of each industry's applied research and development funds that respondents distributed by product field.

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-36. Total (company, Federal, and other) funds for industrial energy R&amp;D performance, by industry and size of company: 1985–95 and projected 1996

Page 1 of 4

Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Projected 1996	
		[Dollars in millions]												
All Industries.....		\$3,954	\$3,358	\$3,576	\$3,706	\$3,789	\$4,004	\$4,615	\$3,225	\$2,747	\$2,549	\$2,330	\$2,184	
Distribution by industry:														
Manufacturing.....		3,616	3,030	3,143	3,155	3,175	3,274	3,918	2,631	2,111	1,740	1,797	1,763	
Food, kindred, and tobacco products.....	20,21	2	2	(S)	(3)	(D)	(D)	(D)	(D)	0	(D)	(D)	0	
Textiles and apparel.....	22,23	1	(D)	(D)	(D)	(D)	(D)	0	0	0	0	0	0	
Lumber, wood products, and furniture.....	24,25	3	(D)											
Paper and allied products.....	26	(D)	(D)	1	1	(D)	(D)	(D)	(D)	1	(D)	(D)	(D)	
Chemicals and allied products.....	28	162	(S)	(S)	(S)	111	417	(D)	72	(D)	(D)	(D)	(D)	
Industrial chemicals.....	281–82,286	(D)	(D)	(D)	(D)	108	414	(D)	66	(D)	(D)	(D)	(D)	
Drugs and medicines.....	283	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	0	0	0	0	
Other chemicals.....	284–85,287–89	2	2	2	4	(D)	(D)	(D)	(D)	0	(D)	2	2	
120 Petroleum refining and extraction.....	13,29	1,199	999	914	1,056	1,128	1,177	1,416	1,150	798	(D)	(D)	(D)	
Rubber products.....	30	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	2	(D)	(D)	(D)	
Stone, clay, and glass products.....	32	(D)	(D)	1	(D)	1	(D)							
Primary metals.....	33	(S)	74	18	21	(D)	(D)	26	3	17	68	(D)	(D)	
Ferrous metals and products.....	331–32,3398–99	26	(D)											
Nonferrous metals and products.....	333–36	(S)	(D)											
Fabricated metal products.....	34	8	(D)	(D)	(D)	14	49	2	(D)	(D)	1	(D)	(D)	
Machinery.....	35	240	261	(D)	244	260	254	(S)	154	(D)	(D)	(D)	(D)	
Office, computing, and accounting machines.....	357	12	(D)	(D)	(D)	(D)	0	(D)	(D)	0	0	0	0	
Other machinery, except electrical.....	351–56,358–59	228	(D)	(D)	(D)	(D)	235	(D)	(D)	(D)	(D)	(D)	(D)	
Electrical equipment.....	36	733	(D)	578	680	647	627	(D)	(D)	(D)	(D)	(D)	(D)	
Radio and TV receiving equipment.....	365	0	0	0	0	0	0	0	0	0	0	0	0	
Communication equipment.....	366	115	(D)	12	(D)	(D)								
Electronic components.....	367	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	8	14	(D)	(D)	
Other electrical equipment.....	361–64,369	(D)	(D)	(S)	(D)									

See explanatory information and SOURCE at end of table.

Table A-36. Total (company, Federal, and other) funds for industrial energy R&amp;D performance, by industry and size of company: 1985–95 and projected 1996

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Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Projected 1996	
		[Dollars in millions]												
Distribution by industry:														
Transportation equipment.....	37	(S)	(S)	(S)	(D)	\$847	\$863	(S)	(D)	(D)	(D)	(D)	(D)	(D)
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other transportation equipment.....	373–75,379	(D)	(D)	(D)	(D)	(D)	(D)	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Aircraft and missiles.....	372,376	\$681	\$537	\$754	\$652	577	626	(D)	478	381	(D)	(D)	(D)	(D)
Professional and scientific instruments....	38	(D)	(D)	17	16	12	11	(S)	(S)	(D)	(D)	(D)	(D)	0
Scientific and mechanical measuring instruments.....	381–82	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	0	(D)	0	0	0
Optical, surgical, photographic, and other instruments.....	384–87	(D)	0	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	0
Other manufacturing industries.....	27,31,39	0	0	0	0	(D)	(D)	(D)	0	0	0	(D)	0	0
Nonmanufacturing 1/.....	338	328	433	551	614	730	697	594	636	809	533	421		
121	Transportation and utilities.....	40–42,44–49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	106	100
	Communications.....	48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0
	Telephone communications.....	481	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0
	Other communications.....	482–484,489	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0
	Electric, gas, and sanitary services.....	49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	106	(D)
	Other transportation and utilities.....	40–42,44–47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	(D)
	Trade.....	50–59	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)
	Finance, insurance, and real estate.....	60–65,67	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0
	Services.....	701,72,73, 75–81,83, 84,87,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	218 (S)	94
	Business services.....	73	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0
	Computer and data processing services.....	737	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0
	Other business services.....	731–736,738	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0

See explanatory information and SOURCE at end of table.

Table A-36. Total (company, Federal, and other) funds for industrial energy R&amp;D performance, by industry and size of company: 1985–95 and projected 1996

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Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Projected 1996	
		[Dollars in millions]												
Distribution by industry:														
Health services.....	80	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)	
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)	
Other health services.....	802–805, 808–809	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	\$0	\$0	
Engineering and management services.....	87	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)	
Engineering, architectural, and surveying.....	871	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	93	80	
Research, development, and testing.....	873	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)	
Other engineering and management services.....	872,874	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	
Other services.....	701,72,75–79, 81,83,84,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	
Other nonmanufacturing industries.....	07–12,14,15, 161–162,17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)	

See explanatory information and SOURCE at end of table.

Table A-36. Total (company, Federal, and other) funds for industrial energy R&amp;D performance, by industry and size of company: 1985–95 and projected 1996

Page 4 of 4

Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Projected 1996	
		[Dollars in millions]												
Distribution by size of company: [Number of employees]														
Total.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	\$2,549	\$2,330	\$2,184	
Fewer than 500.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	28	39	39	
500 to 999.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	86	22	24	
1,000 to 4,999.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	76	45	24	
5,000 to 9,999.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	48	48	47	
10,000 to 24,999.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	782	749	640	
25,000 or more.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	1,529	1,427	1,410	

1/ Until 1995, data were not broken down below this level of detail for most nonmanufacturing industries.

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

NA = Not available.

**NOTES:** Detailed data for 1985 and 1987 were estimated on the basis of (a) data actually reported in those years, (b) revised data for those years on reported on the 1986 and 1988 survey forms, and (c) adjustments to a new sample design in 1987.

As a result of a new sample design, statistics for 1988–91 have been revised since originally published. These statistics now better reflect R&amp;D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

Energy and pollution-abatement R&amp;D data are collected only on form RD-1L, which is sent to larger R&amp;D-performing companies for odd-numbered survey years (see the technical notes in section B of this report for an explanation of the various survey questionnaires). Consequently, the universe of companies that perform energy or pollution-abatement R&amp;D may not be represented by the statistics in this table.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-37. Company and other (except Federal) funds for industrial energy R&amp;D performance, by selected industry: 1985–95 and projected 1996

Page 1 of 1

Industry	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Projected 1996
		[Dollars in millions]											
Total.....		\$2,537	\$2,167	\$2,410	\$2,317	\$2,418	\$2,558	\$2,691	\$2,084	\$1,694	\$1,660	\$1,360	\$1,306
Chemicals and allied products...	28	(D)	(D)	(D)	59	97	412	(D)	(D)	(D)	(D)	35	35
Petroleum refining and extraction.....	13,29	1,145	957	911	1,050	1,124	1,174	1,409	1,143	790	596	646	617
Machinery.....	35	(D)	(D)	(D)	229	246	220	(S)	146	177	270	108	110
Electrical equipment.....	36	71	(D)	(D)	123	92	90	101	159	114	174	(D)	(D)
Aircraft and missiles.....	372,376	0 (264)	0 (236)	(D)	0 (211)	0 (160)	0 (199)	(D)	(D)	(D)	(D)	(D)	(D)
All other manufacturing industries.....		610	497	564	450	451	173	(S)	41	24	73	30	33
Nonmanufacturing industries....	07-10,12-17, 40-42,44-49, 50-59,60-65, 67,701,73, 75-76,78-79, 81-84,83-84, 87,89	84	(D)	170	195	248	290	274	281	403	449	398	372

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

NA = Not available.

**NOTES:** Detailed data for 1985 and 1987 were estimated on the basis of (a) data actually reported in those years, (b) revised data for those years on reported on the 1986 and 1988 survey forms, and (c) adjustments to a new sample design in 1987.

As a result of a new sample design, statistics for 1988–91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

Energy and pollution-abatement R&D data are collected only on form RD-1L, which is sent to larger R&D-performing companies for odd-numbered survey years (see the technical notes in section B of this report for an explanation of the various survey questionnaires). Consequently, the universe of companies that perform energy or pollution-abatement R&D may not be represented by the statistics in this table.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-38. Federal funds for industrial energy R&amp;D performance, by selected industry: 1985–95 and projected 1996

Page 1 of 1

Industry	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Projected 1996
[Dollars in millions]													
Total.....		\$1,417	\$1,191	\$1,166	\$1,389	\$1,371	\$1,446	\$1,924	\$1,141	\$1,053	\$888	\$970	\$878
Chemicals and allied products.....	28	(D)	(D)	(D)	13	14	5	(D)	(D)	(D)	(D)	(D)	(D)
Petroleum refining and extraction.....	13,29	54	42	3	6	4	3	6	7	8	(D)	(D)	(D)
Machinery.....	35	(D)	(D)	(D)	15	14	34	(S)	(D)	(D)	(D)	(D)	(D)
Electrical equipment.....	36	662	(D)	(D)	557	555	537	(D)	(D)	(D)	(D)	(D)	(D)
Aircraft and missiles.....	372,376	417	302	(D)	441	417	427	(D)	(D)	(D)	(D)	(D)	(D)
All other manufacturing industries.....		13	4	5	1	0	2	1	2	2	207	1	1
Nonmanufacturing industries.....	07-10,12-17, 40-42,44-49, 50-59,60-65,67, 701,73,75-76,  76,78-79,80-81, 83-84,87,89	254	(D)	263	356	367	438	423	313	233	359	134 (S)	49

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

NA = Not available.

**NOTES:** Detailed data for 1985 and 1987 were estimated on the basis of (a) data actually reported in those years, (b) revised data for those years on reported on the 1986 and 1988 survey forms, and (c) adjustments to a new sample design in 1987.

As a result of a new sample design, statistics for 1988–91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

Energy and pollution-abatement R&D data are collected only on form RD-1L, which is sent to larger R&D-performing companies for odd-numbered survey years (see the technical notes in section B of this report for an explanation of the various survey questionnaires). Consequently, the universe of companies that perform energy or pollution-abatement R&D may not be represented by the statistics in this table.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-39. Total (company, Federal, and other) funds for industrial energy R&amp;D performance, by primary energy source: 1985–95 and projected 1996

Page 1 of 1

Primary energy source	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Projected 1996
[Dollars in millions]												
Total.....	\$3,954	\$3,358	\$3,576	\$3,706	\$3,789	\$4,004	\$4,615	\$3,225	\$2,747	\$2,549	\$2,330	\$2,184
Fossil fuels.....	1,876	1,476	1,548	1,583	1,652	1,879	2,128	1,498	1,082	966	811	838
Oil.....	1,395	NA	(S)	NA	(S)	NA	(S)	NA	693	NA	608	627
Gas.....	189	NA	191	NA	(S)	NA	(S)	NA	215	NA	124	104
Shale.....	125	NA	11	NA	77	NA	(S)	NA	(D)	NA	0	0
Coal.....	150	NA	46	NA	(S)	NA	(S)	NA	97	NA	62	(D)
Synthetic fossil fuels.....	111	NA	23	NA	17	NA	(S)	NA	23	NA	(D)	(D)
Mining.....	8	NA	3	NA	(S)	NA	(S)	NA	(D)	NA	3	(D)
Other.....	31	NA	(S)	NA	(S)	NA	(S)	NA	(D)	NA	(D)	(D)
Other fossil fuels.....	17	NA	51	NA	(S)	NA	58	NA	(D)	NA	17	(D)
Nuclear.....	1,212	979	926	1,098	919	973	1,139	849	818	(D)	255	160
Fission.....	1,062	NA	859	NA	856	NA	1,134	NA	(D)	NA	(D)	(D)
Fusion.....	150	NA	(S)	NA	63	NA	5	NA	(D)	NA	(D)	(D)
Total geothermal, solar, and 126 conservation and utilization.....	471	504	421	492	612	(D)	866	608	442	469	380	353
Geothermal.....	54	NA	48	NA	(D)	NA	(S)	NA	90	NA	(D)	(D)
Solar.....	96	NA	95	NA	(D)	NA	(S)	NA	59	NA	(D)	(D)
Conservation and utilization.....	321	NA	281	NA	391	NA	(S)	NA	293	NA	219	201
All other energy.....	395	399	(S)	533	606	681	507	271	404	(D)	884	833

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

NA = Not available.

NOTES: Detailed data for 1985 and 1987 were estimated on the basis of (a) data actually reported in those years, (b) revised data for those years on reported on the 1986 and 1988 survey forms, and (c) adjustments to a new sample design in 1987.

As a result of a new sample design, statistics for 1988–91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

Energy and pollution-abatement R&D data are collected only on form RD-1L, which is sent to larger R&D-performing companies for odd-numbered survey years (see the technical notes in section B of this report for an explanation of the various survey questionnaires). Consequently, the universe of companies that perform energy or pollution-abatement R&D may not be represented by the statistics in this table.

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-40. Company and other (except Federal) funds for industrial energy R&amp;D performance, by primary energy source: 1985–95 and projected 1996

Page 1 of 1

Primary energy source	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Projected 1996
	[Dollars in millions]											
Total.....	\$2,537	\$2,167	\$2,410	\$2,317	\$2,418	\$2,558	\$2,691	\$2,084	\$1,694	\$1,660	\$1,360	\$1,306
Fossil fuels.....	1,797	(D)	(D)	1,519	1,485	1,704	1,869	1,414	1,003	874	787	816
Oil.....	1,381	NA	(S)	NA	(S)	NA	(S)	NA	(D)	NA	(D)	623
Gas.....	(D)	NA	(S)	NA	(S)	NA	(S)	NA	210	NA	(D)	(D)
Shale.....	124	NA	(S)	NA	(S)	NA	(S)	NA	0	NA	0	0
Coal.....	(S)	NA	29	NA	(S)	NA	(S)	NA	57	NA	43	73
Synthetic fossil fuels.....	91	NA	(S)	NA	(D)	NA	(S)	NA	(D)	NA	(D)	(D)
Mining.....	8	NA	(D)	NA	(D)	NA	(D)	NA	0	NA	3	(D)
Other.....	(S)	NA	(D)	NA	(S)	NA	(D)	NA	(D)	NA	(D)	(D)
Other fossil fuels.....	17	NA	(S)	NA	(S)	NA	(S)	NA	(D)	NA	(D)	(D)
Nuclear.....	150	91	109	117	39	72	46	72	58	(D)	(D)	(D)
Fission.....	135	NA	82	NA	27	NA	45	NA	(D)	NA	63	(D)
Fusion.....	15	NA	(S)	NA	12	NA	1	NA	(D)	NA	(D)	(D)
Total geothermal, solar, and conservation and utilization.....	313	(D)	(D)	314	416	278	478	474	307	300	245	226
Geothermal.....	27	NA	(D)	NA	(D)	NA	(S)	NA	(D)	NA	(D)	(D)
Solar.....	51	NA	41	NA	(D)	NA	(S)	NA	(D)	NA	14	(D)
Conservation and utilization.....	235	NA	(D)	NA	384	NA	(S)	NA	203	NA	(D)	(D)
All other energy.....	277	(D)	(D)	367	478	504	298	124	325	(D)	(D)	(D)

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

NA = Not available.

NOTES: Detailed data for 1985 and 1987 were estimated on the basis of (a) data actually reported in those years, (b) revised data for those years on reported on the 1986 and 1988 survey forms, and (c) adjustments to a new sample design in 1987.

As a result of a new sample design, statistics for 1988–91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

Energy and pollution-abatement R&D data are collected only on form RD-1L, which is sent to larger R&D-performing companies for odd-numbered survey years (see the technical notes in section B of this report for an explanation of the various survey questionnaires). Consequently, the universe of companies that perform energy or pollution-abatement R&D may not be represented by the statistics in this table.

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-41. Federal funds for industrial energy R&amp;D performance, by primary energy source: 1985–95 and projected 1996

Page 1 of 1

Primary energy source	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Projected 1996
[Dollars in millions]												
Total.....	\$1,417	\$1,191	\$1,166	\$1,385	\$1,265	\$1,418	\$1,924	\$1,141	\$1,053	\$888	\$970	\$878
Fossil fuels.....	78	(D)	(D)	63	(D)	(D)	(S)	84	79	92	24	22
Oil.....	13	NA	(S)	NA	(S)	NA	(S)	NA	(D)	NA	(D)	4
Gas.....	(D)	NA	(D)	NA	(S)	NA	(S)	NA	5	NA	(D)	(D)
Shale.....	1	NA	(D)	NA	(S)	NA	(S)	NA	(D)	NA	0	0
Coal.....	(S)	NA	17	NA	(S)	NA	(S)	NA	40	NA	19	(D)
Synthetic fossil fuels.....	20	NA	8	NA	(D)	NA	(S)	NA	(D)	NA	(D)	(D)
Mining.....	0	NA	(D)	NA	(D)	NA	(D)	NA	(D)	NA	0	0
Other.....	(S)	NA	(D)	NA	(S)	NA	(D)	NA	(S)	NA	(D)	(D)
Other fossil fuels.....	0	NA	1	NA	(S)	NA	(S)	NA	(D)	NA	(D)	(D)
Nuclear.....	1,063	888	817	979	859	885	1,093	776	759	536	(D)	(D)
Fission.....	928	NA	777	NA	809	NA	1,089	NA	(D)	NA	(D)	(D)
Fusion.....	135	NA	(S)	NA	50	NA	4	NA	(D)	NA	(D)	(D)
Total geothermal, solar, and conservation and utilization.....	158	(D)	(D)	178	(D)	(D)	(S)	135	136	169	135	127
Geothermal.....	26	NA	(D)	NA	(D)	NA	11	NA	(D)	NA	(D)	(D)
Solar.....	45	NA	37	NA	(D)	NA	38	NA	(D)	NA	(D)	(D)
Conservation and utilization.....	87	NA	(D)	NA	(D)	NA	(S)	NA	(S)	NA	(D)	(D)
All other energy.....	118	(D)	(D)	165	(D)	174	(S)	146	79	91	(D)	(D)

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

NA = Not available.

**NOTES:** Detailed data for 1985 and 1987 were estimated on the basis of (a) data actually reported in those years, (b) revised data for those years on reported on the 1986 and 1988 survey forms, and (c) adjustments to a new sample design in 1987.

As a result of a new sample design, statistics for 1988–91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

Energy and pollution-abatement R&D data are collected only on form RD-1L, which is sent to larger R&D-performing companies for odd-numbered survey years (see the technical notes in section B of this report for an explanation of the various survey questionnaires). Consequently, the universe of companies that perform energy or pollution-abatement R&D may not be represented by the statistics in this table.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-42. Number of companies performing energy R&amp;D and total number of R&amp;D-performing companies, by industry and size of company: 1995

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Industry	SIC code	Total		Size of company												
				Fewer than 500 employees		500 to 999 employees		1,000 to 4,999 employees		5,000 to 9,999 employees		10,000 to 24,999 employees		25,000 or more employees		
		Total	Energy	Total	Energy	Total	Energy	Total	Energy	Total	Energy	Total	Energy	Total	Energy	
All Industries.....		33,314	110	30,284	13	1,235	8	1,217	28	274	14	172	31	131	16	
Manufacturing.....		17,537	72	15,400	7	794	4	955	21	179	7	131	21	78	12	
Food, kindred, and tobacco products.....	20,21	780	1	629	1	45	0	72	0	12	0	12	0	10	0	
Textiles and apparel.....	22,23	623	0	527	0	41	0	38	0	6	0	9	0	2	0	
Lumber, wood products, and furniture.....	24,25	690	1	610	0	31	0	40	1	7	0	1	0	1	0	
Paper and allied products.....	26	239	3	160	0	17	0	41	1	7	1	9	0	6	1	
Chemicals and allied products.....	28	1,600	10	1,386	0	59	0	89	4	39	1	19	3	8	2	
Industrial chemicals.....	281-82,286	386	5	304	0	36	0	29	1	5	0	9	2	3	2	
Drugs and medicines.....	283	339	0	288	0	10	0	26	0	3	0	8	0	4	0	
Other chemicals.....	284-85,287-89	875	5	794	0	13	0	34	3	31	1	2	1	1	0	
Petroleum refining and extraction.....		13,29	54	16	28	2	1	1	10	2	2	1	9	7	4	3
Rubber products.....	30	920	3	769	0	75	0	61	3	8	0	4	0	2	0	
Stone, clay, and glass products.....	32	399	1	344	0	26	0	22	1	3	0	4	0	0	0	
Primary metals.....	33	258	7	150	0	36	1	50	1	14	2	5	2	3	1	
Ferrous metals and products.....	331-32,3398-99	73	4	17	0	11	0	30	0	12	2	2	1	1	1	
Nonferrous metals and products....	333-36	185	3	132	0	25	1	20	1	2	0	3	1	2	0	
Fabricated metal products.....	34	1,392	1	1,233	0	68	0	69	1	8	0	14	0	0	0	
Machinery.....	35	3,937	12	3,613	2	131	0	150	3	22	1	15	5	6	1	
Office, computing, and accounting machines.....	357	426	0	377	0	15	0	25	0	6	0	2	0	1	0	
Other machinery, except electrical.....	351-56,358-59	3,511	12	3,236	2	116	0	125	3	16	1	13	5	5	1	
Electrical equipment.....	36	2,475	10	2,195	2	111	2	133	3	15	0	9	2	12	1	
Radio and TV receiving equipment.....	365	84	0	75	0	3	0	6	0	0	0	0	0	0	0	
Communication equipment.....	366	466	1	404	0	32	0	24	1	2	0	2	0	2	0	
Electronic components.....	367	893	2	786	1	39	1	56	0	7	0	2	0	3	0	
Other electrical equipment.....	361-64,369	1,032	7	930	1	37	1	47	2	6	0	5	2	7	1	

See explanatory information and SOURCE at end of table.

Table A-42. Number of companies performing energy R&amp;D and total number of R&amp;D-performing companies, by industry and size of company: 1995

Page 2 of 3

Industry	SIC code	Total		Size of company											
				Fewer than 500 employees		500 to 999 employees		1,000 to 4,999 employees		5,000 to 9,999 employees		10,000 to 24,999 employees		25,000 or more employees	
		Total	Energy	Total	Energy	Total	Energy	Total	Energy	Total	Energy	Total	Energy	Total	Energy
Transportation equipment.....	37	599	5	462	0	35	0	63	0	15	1	9	1	15	3
Motor vehicles and motor vehicles equipment.....	371	483	1	390	0	29	0	46	0	9	0	5	1	4	0
Other transportation equipment.....	373-75,379	31	0	14	0	3	0	9	0	0	0	3	0	2	0
Aircraft and missiles.....	372,376	85	4	58	0	3	0	8	0	6	1	1	0	9	3
Professional and scientific instruments.....	38	2,663	1	2,489	0	89	0	68	1	9	0	2	0	6	0
Scientific and mechanical measuring instruments.....	381-82	1,731	0	1,667	0	33	0	23	0	3	0	1	0	4	0
Optical, surgical, photographic, and other instruments.....	384-87	933	1	823	0	56	0	45	1	6	0	1	0	2	0
Other manufacturing industries.....	27,31,39	908	1	805	0	30	0	48	0	11	0	10	1	3	0
Nonmanufacturing .....		15,777	38	14,884	6	441	4	262	7	95	7	41	10	53	4
Transportation and utilities.....	40-42,44-49	249	20	123	0	2	0	70	6	18	5	15	8	21	1
Communications.....	48	99	0	58	0	2	0	27	0	1	0	0	0	11	0
Telephone communications.....	481	63	0	25	0	0	0	25	0	1	0	0	0	11	0
Other communications.....	482-484,489	37	0	32	0	2	0	2	0	0	0	0	0	0	0
Electric, gas, and sanitary services.....	49	132	20	64	0	0	0	38	6	16	5	13	8	2	1
Other transportation and utilities....	40-42,44-47	18	0	2	0	0	0	5	0	1	0	2	0	8	0
Trade.....	50-59	5,727	3	5,593	0	22	1	52	0	40	1	5	0	15	1
Finance, insurance, and real estate....	60-65,67	169	0	74	0	57	0	15	0	16	0	2	0	5	0
Services.....	701,72,73,75-81,83,84, 87,89	8,286	11	8,034	4	100	3	109	0	17	1	16	2	10	1
Business services.....	73	4,266	0	4,106	0	68	0	68	0	10	0	7	0	7	0
Computer and data processing services.....	737	3,557	0	3,429	0	56	0	57	0	7	0	5	0	3	0
Other business services.....	731-736,738	709	0	677	0	12	0	11	0	3	0	2	0	4	0

See explanatory information and SOURCE at end of table.

Table A-42. Number of companies performing energy R&amp;D and total number of R&amp;D-performing companies, by industry and size of company: 1995

Page 3 of 3

Industry	SIC code	Total		Size of company											
				Fewer than 500 employees		500 to 999 employees		1,000 to 4,999 employees		5,000 to 9,999 employees		10,000 to 24,999 employees		25,000 or more employees	
		Total	Energy	Total	Energy	Total	Energy	Total	Energy	Total	Energy	Total	Energy	Total	Energy
Health services.....	80	1,055	1	1,036	0	6	0	9	0	0	0	3	0	1	1
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	745	1	730	0	6	0	5	0	0	0	2	0	1	1
Other health services.....	802-805, 808-809	310	0	306	0	0	0	3	0	0	0	1	0	0	0
Engineering and management services.....	87	2,666	10	2,613	4	22	3	24	0	3	1	3	2	1	0
Engineering, architectural, and surveying.....	871	1,052	6	1,013	2	15	2	20	0	2	1	1	1	1	0
Research, development, and testing.....	873	1,333	4	1,324	2	6	1	2	0	0	0	1	1	0	0
Other engineering and management services.....	872,874	281	0	276	0	1	0	2	0	1	0	1	0	0	0
Other services.....	701,72,75-79, 81,83,84,89	300	0	279	0	4	0	8	0	4	0	3	0	1	0
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	1,344	4	1,059	2	259	0	16	1	5	0	3	0	2	1

**KEY:** Energy and pollution-abatement R&D data are collected only on form RD-1L, which is sent to larger R&D-performing companies for odd-numbered survey years (see the technical notes in section B of this report for an explanation of the various survey questionnaires). Consequently, the universe of companies that perform energy or pollution-abatement R&D may not be represented by the statistics in this table.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-43. Total (company, Federal, and other) funds for industrial pollution-abatement R&amp;D performance, by industry and size of company: 1985–95 and projected 1996

Page 1 of 3

Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Projected 1996
		[Dollars in millions]											
All Industries.....		(S)	(S)	(S)	(S)	\$1,372	\$1,044	\$1,326	\$638	\$845	\$931	\$892	\$627
Distribution by industry:													
Manufacturing.....		(S)	(S)	(S)	(S)	1,372	1,044	1,186	583	769	739	594	513
Food, kindred, and tobacco products.....	20,21	\$1	\$1	\$1	\$1	3	2	4	2	(S)	4	4	(D)
Textiles and apparel.....	22,23	2/	(D)	2/	(S)	2/	2/	(S)	(S)	0	(D)	(D)	(D)
Lumber, wood products, and furniture.....	24,25	1	(D)	(D)	(D)	(D)	(D)	(D)	1	1	2	(D)	(D)
Paper and allied products.....	26	8	7	7	9	19	18	13	10	14	15	10	7
Chemicals and allied products.....	28	(S)	168	117	136	178	163	188	127	(D)	157	101	88
Industrial chemicals.....	281-82,286	(S)	(S)	(D)	117	61	(D)	(S)	87	135	134	93	80
Drugs and medicines.....	283	(D)	(D)	(D)	(D)	(D)	(D)	16	16	(D)	(D)	(D)	(D)
Other chemicals.....	284-85,287-89	14	(D)	12	(D)	(D)	67	26	24	(D)	(D)	(D)	(D)
Petroleum refining and extraction.....	13,29	60	63	51	60	75	72	111	107	111	102	34	43
Rubber products.....	30	(D)	(D)	(D)	(S)	1	1	1	1	(D)	2	2	(D)
Stone, clay, and glass products.....	32	3	4	(D)	(D)	(D)	(D)	(D)	39	44	47	(D)	(D)
Primary metals.....	33	20	8	5	9	10	8	(S)	4	3	(D)	19	11
Ferrous metals and products.....	331-32,3398-99	11	2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Nonferrous metals and products.....	333-36	9	6	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Fabricated metal products.....	34	6	(D)	(D)	(D)	1	2	5	7	14	13	11	11
Machinery.....	35	26	33	38	46	111	116	(S)	91	186	(D)	222	194
Office, computing, and accounting machines.....	357	0	0	0	0	0	0	(D)	0	(D)	(D)	0	0
Other machinery, except electrical.....	351-56,358-59	26	33	38	46	111	116	(D)	91	(D)	(D)	222	194
Electrical equipment.....	36	(D)	5	(D)	(D)	9	11	(D)	(D)	(D)	33	(D)	(D)
Radio and TV receiving equipment.....	365	0	0	0	0	0	0	0	0	0	0	0	0
Communication equipment.....	366	1	1	(D)	(D)	7	8	(D)	(D)	(D)	(D)	(D)	(D)
Electronic components.....	367	2/	(D)	(D)	0	(D)	2	1	(D)	3	3	(D)	(D)
Other electrical equipment.....	361-64,369	(D)	(D)	(D)	(D)	(D)	1	(D)	(D)	(D)	(D)	(D)	(D)
Transportation equipment.....	37	(S)	(S)	(S)	(S)	(S)	(S)	(S)	145	174	110	109	78
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	(D)	(D)	(D)	(D)	(D)	74	80	(D)	(D)	

See explanatory information and SOURCE at end of table.

Table A-43. Total (company, Federal, and other) funds for industrial pollution-abatement R&amp;D performance, by industry and size of company: 1985–95 and projected 1996

Page 2 of 3

Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Projected 1996	
		[Dollars in millions]												
Distribution by industry:														
Other transportation equipment.....	373-75,379	(D)	(D)	(D)	(D)	(D)	(D)	(D)	0	(D)	(D)	0	0	0
Aircraft and missiles.....	372,376	(S)	87	123	103	120	195	114	(D)	(D)	(D)	(D)	(D)	(D)
Professional and scientific instruments.....	38	2	(D)	(D)	3	(D)	4	10	6	8	(D)	13	8	
Scientific and mechanical measuring instruments.....	381-82	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	8 (S)	(D)	
Optical, surgical, photographic, and other instruments.....	384-87	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	6	5	(D)
Other manufacturing industries.....	27,31,39	(S)	0	(D)	(D)	1	(1)	(D)	(D)	(D)	(D)	(D)	0	0
Nonmanufacturing 1/.....		118	80	113	(S)	(S)	(S)	140	55	76	193	299 (S)	113	
Transportation and utilities.....	40-42,44-49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	91	63	
Communications.....	48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	
Telephone communications.....	481	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	
Other communications.....	482-484,489	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	
Electric, gas, and sanitary services.....	49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	91	(D)	
Other transportation and utilities.....	40-42,44-47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	(D)	
Trade.....	50-59	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)	
Finance, insurance, and real estate.....	60-65,67	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	
Services.....	701,72,73,75-81,83,84,87,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	20	
Business services.....	73	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	
Computer and data processing services.....	737	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	
Other business services.....	731-736,738	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	
Health services.....	80	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)	
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)	
Other health services.....	802-805,808-809	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0	

See explanatory information and SOURCE at end of table.

Table A-43. Total (company, Federal, and other) funds for industrial pollution-abatement R&amp;D performance, by industry and size of company: 1985–95 and projected 1996

Page 3 of 3

Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Projected 1996
		[Dollars in millions]											
Engineering and management services....	87	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)
Engineering, architectural, and surveying.....	871	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)
Research, development, and testing....	873	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)
Other engineering and management services.....	872,874	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0
Other services.....	701,72,75–79, 81,83,84,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0
Other nonmanufacturing industries.....	07–12,14,15, 161–162,17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1	(D)
Distribution and size of company: [Number of employees]													
Total.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	931	892	627
Fewer than 500.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	13	23	18
500 to 999.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	2	12	12
1,000 to 4,999.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	74	64	47
5,000 to 9,999.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	60	75	66
10,000 to 24,999.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	307	374	212
25,000 or more.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	475	344	271

1/ Until 1995, data were not broken down below this level of detail for most nonmanufacturing industries.

2/ Less than \$0.5 million.

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

NA = Not available.

NOTES: Detailed data for 1985 and 1987 were estimated on the basis of (a) data actually reported in those years, (b) revised data for those years reported on the 1986 and 1988 survey forms, and (c) adjustments to a new sample design in 1987.

As a result of a new sample design, statistics for 1988–91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

Energy and pollution-abatement R&D data are collected only on form RD-1L, which is sent to larger R&D-performing companies for odd-numbered survey years (see the technical notes in section B of this report for an explanation of the various survey questionnaires). Consequently, the universe of companies that perform energy or pollution-abatement R&D may not be represented by the statistics in this table.

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-44. Company and other (except Federal) funds for industrial pollution-abatement R&amp;D performance, by selected industry: 1985–95 and projected 1996

Page 1 of 1

Industry	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Projected 1996
		[Dollars in millions]											
Total.....		(S)	(S)	(S)	(S)	(S)	\$955	(S)	\$545	\$735	\$734	\$830	\$602
Chemicals and allied products.....	28	(S)	(D)	(D)	(D)	(D)	163	188	126	149	153	101	88
Petroleum refining and extraction.....	13,29	\$61	\$63	\$51	\$60	(D)	(D)	110	106	111	102	34	43
Machinery.....	35	(D)	33	38	46	(D)	116	(S)	90	186	(D)	222	194
Electrical equipment.....	36	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	33	(D)	(D)
Aircraft and missiles.....	372,376	(D)	(D)	62	(D)	\$70	(D)	51	(D)	28	(D)	(D)	(D)
All other manufacturing industries.....		(D)	676	(D)	(D)	737	406	(S)	84	(D)	192	184	141
Nonmanufacturing industries 1/.....	07-10,12-17, 40-42,44-49 50-59,60-65,67, 701,73,75-76, 78-79,80-81, 83-84,87,89	(D)	(D)	(D)	(D)	58	(D)	(D)	38	44	56	241 (S)	92

1/ Nonmanufacturing industries for 1990 and prior years included the following SICs only: 10-11, 14-17, 40-42, 44-51, 53-54, 56, 60, 62-63, 72-73, 78, 806-07, and 87.

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

NOTES: Detailed data for 1985 and 1987 were estimated on the basis of (a) data actually reported in those years, (b) revised data for those years on reported on the 1986 and 1988 survey forms, and (c) adjustments to a new sample design in 1987.

As a result of a new sample design, statistics for 1988–91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

Energy and pollution-abatement R&D data are collected only on form RD-1L, which is sent to larger R&D-performing companies for odd-numbered survey years (see the technical notes in section B of this report for an explanation of the various survey questionnaires). Consequently, the universe of companies that perform energy or pollution-abatement R&D may not be represented by the statistics in this table.

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

**Table A-45. Federal funds for industrial pollution-abatement R&D performance, by selected industry: 1985–95 and projected 1996**

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Industry	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Projected 1996
		[Dollars in millions]											
Total.....		\$169	\$148	\$186	\$191	(S)	\$89	\$92	\$93	\$110	\$198	(D)	\$24
Chemicals and allied products.....	28	(D)	(D)	(D)	(D)	(D)	0	0	(D)	(D)	(D)	\$0	0
Petroleum refining and extraction.....	13,29	0	0	0	0	(D)	(D)	(D)	(D)	0	0	0	0
Machinery.....	35	(D)	0	0	0	(D)	0	0	(D)	0	(D)	0	0
Electrical equipment.....	36	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Aircraft and missiles.....	372376	(D)	(D)	61	(D)	\$50	(D)	(D)	(D)	(D)	(D)	(D)	(D)
All other manufacturing industries.....		(D)	(D)	(D)	0	0	(D)	(D)	2	0	54	1	1
Nonmanufacturing industries 1/.....	07-10,12-17, 40-42,44-49, 50-59,60-65,67, 701,73,75-76, 78-79,80-81, 83-84,87,89	(D)	(D)	(D)	(D)	(D)	(D)	(D)	18	(S)	(D)	(D)	21

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1/ Nonmanufacturing industries for 1990 and prior years included the following SICs only: 10-11, 14-17, 40-42, 44-51, 53-54, 56, 60, 62-63, 72-73, 78, 806-07, and 87.

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

**NOTES:** Detailed data for 1985 and 1987 were estimated on the basis of (a) data actually reported in those years, (b) revised data for those years on reported on the 1986 and 1988 survey forms, and (c) adjustments to a new sample design in 1987.

As a result of a new sample design, statistics for 1988-91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

Energy and pollution-abatement R&D data are collected only on form RD-1L, which is sent to larger R&D-performing companies for odd-numbered survey years (see the technical notes in section B of this report for an explanation of the various survey questionnaires). Consequently, the universe of companies that perform energy or pollution-abatement R&D may not be represented by the statistics in this table.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

**Table A-46. Total (company, Federal, and other) funds for industrial pollution-abatement R&D performance, by type of pollution: 1985–95 and projected 1996**

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Type of pollution	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Projected 1996
	[Dollars in millions]											
Total.....	(S)	(S)	(S)	(S)	(S)	\$1,044	(S)	\$638	\$845	\$931	(D)	\$627
Air.....	(S)	NA	(S)	NA	(S)	NA	(S)	NA	489	NA	(D)	(D)
Automotive emission.....	(D)	NA	(S)	NA	(S)	NA	(S)	NA	127	NA	\$122	94
Electric power plant emissions.....	\$12	NA	\$16	NA	\$36	NA	(S)	NA	(D)	NA	(D)	(D)
All other.....	(D)	NA	(S)	NA	(S)	NA	(S)	NA	(D)	NA	(D)	(D)
Water.....	(S)	NA	(S)	NA	(S)	NA	(S)	NA	87	NA	68	53
Solid waste.....	(S)	NA	206	NA	(S)	NA	(S)	NA	124	NA	59	42
Other.....	108	NA	90	NA	85	NA	(S)	NA	145	NA	(D)	(D)

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

NA = Not available.

**NOTES:** Detailed data for 1985 and 1987 were estimated on the basis of (a) data actually reported in those years, (b) revised data for those years on reported on the 1986 and 1988 survey forms, and (c) adjustments to a new sample design in 1987.

As a result of a new sample design, statistics for 1988–91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

Energy and pollution-abatement R&D data are collected only on form RD-1L, which is sent to larger R&D-performing companies for odd-numbered survey years (see the technical notes in section B of this report for an explanation of the various survey questionnaires). Consequently, the universe of companies that perform energy or pollution-abatement R&D may not be represented by the statistics in this table.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

**Table A-47. Total (company, Federal, and other) funds for industrial pollution-abatement R&D performance,  
by type of pollution and source of funds: 1994-95 and projected 1996**

Page 1 of 1

Type of pollution	1994			1995			1996 (Projected)		
	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
	[Dollars in millions]								
Total.....	\$931	\$198	\$734	(D)	(D)	\$830	\$627	\$37	\$589
Air.....	NA	NA	NA	(D)	(D)	583	(D)	(D)	415
Automotive emission.....	NA	NA	NA	\$122	\$0	122	94	0	94
Electric power plant emissions.....	NA	NA	NA	(D)	(D)	209	(D)	(D)	69
All other.....	NA	NA	NA	(D)	(D)	251	(D)	(D)	252
Water.....	NA	NA	NA	68	1	67	53	0	52
Solid waste.....	NA	NA	NA	59	4	55	42	5	37
Other.....	NA	NA	NA	(D)	(D)	125	(D)	(D)	85

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

NA = Not available.

**NOTE:** Energy and pollution-abatement R&D data are collected only on form RD-1L, which is sent to larger R&D-performing companies for odd-numbered survey years (see the technical notes in section B of this report for an explanation of the various survey questionnaires). Consequently, the universe of companies that perform energy or pollution-abatement R&D may not be represented by the statistics in this table.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-48. Total (company, Federal, and other) funds for industrial R&amp;D performance in selected years by state: 1976-95

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Area	1976	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995	
	[Dollars in millions]											
United States, total.....	\$26,997	\$29,825	\$38,226	\$51,810	\$65,268	\$84,239	\$92,155	\$102,055	\$116,952	\$117,400	\$132,103	
Northeast.....	8,096	8,687	10,296	14,270	18,957	24,837	24,549	27,998	35,170	33,785	35,030	
New England.....	2,147	2,400	3,003	3,855	4,680	7,456	7,965	8,828	(S)	10,092	12,848	
Maine.....	21	24	40	(T)	(T)	(D)	39	33	(S)	(D)	286	
New Hampshire.....	(T)	(T)	(T)	(T)	(T)	(D)	90	(D)	(D)	248	472	
Vermont.....	(T)	(T)	(T)	(T)	(T)	(D)	236	(D)	(D)	(D)	248	
Massachusetts.....	1,156	1,349	1,690	1,907	2,466	4,495	5,255	5,851	(S)	6,952	7,416	
Rhode Island.....	22	24	49	87	171	213	224	140	174	176	520	
Connecticut.....	815	876	985	1,514	1,682	2,129	2,121	2,421	1,756	2,373	3,906	
Middle Atlantic.....	5,949	6,287	7,293	10,415	14,277	17,381	16,583	19,170	25,553	23,693	22,182	
New York.....	2,418	2,542	2,959	4,057	5,951	7,561	6,276	8,107	9,457	8,820	8,651	
New Jersey.....	1,717	1,900	2,191	3,355	4,364	5,975	5,876	6,410	8,933	8,162	8,200	
Pennsylvania.....	1,814	1,845	2,143	3,003	3,963	3,844	4,430	4,653	(S)	6,711	5,331	
North Central.....	6,574	7,777	10,013	12,692	15,245	19,390	23,180	24,725	28,933	28,646	33,004	
139	East North Central.....	5,390	6,270	8,065	9,742	11,967	15,254	17,635	19,395	24,017	23,830	26,592
	Ohio.....	1,183	1,323	1,635	1,781	2,282	3,067	3,415	3,964	5,406	5,144	4,001
	Indiana.....	469	541	723	1,054	(T)	(D)	1,860	1,823	2,274	2,177	2,721 (S)
	Illinois.....	1,226	1,360	1,673	2,077	2,291	(D)	4,099	4,068	5,750	5,242	5,776 (S)
	Michigan.....	2,249	2,750	3,614	4,272	5,716	6,436	7,095	8,506	9,283	9,924	12,388
	Wisconsin.....	263	296	420	558	(T)	728	1,165	1,035	1,304	1,343	1,706
	West North Central.....	1,184	1,507	1,948	2,950	3,278	4,136	5,545	5,331	4,916	4,816	6,412 (S)
	Minnesota.....	551	602	802	1,180	1,814	(D)	2,145	2,075	2,070	2,458	2,636 (S)
	Iowa.....	144	173	150	393	287	(D)	328	365	527	533	998
	Missouri.....	398	630	746	1,137	(T)	(D)	1,823	2,391	(S)	1,375 (S)	2,028 (S)
North Dakota.....	(T)	(T)	(T)	(T)	(T)	10	57	(S)	(S)	9	12	
South Dakota.....	(T)	(T)	(T)	(T)	(T)	(S)	4	4	6	22	19	
Nebraska.....	13	14	15	28	26	(D)	59	64	67	128	150	
Kansas.....	76	84	216	211	293	(D)	1,128	406	(S)	292 (S)	569	

See explanatory information and SOURCE at end of table.

Table A-48. Total (company, Federal, and other) funds for industrial R&amp;D performance in selected years by state: 1976-95

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Area	1976	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995
	[Dollars in millions]										
South.....	\$3,442	\$3,691	\$4,496	\$6,987	\$9,292	\$12,948	\$15,938	\$15,389	\$17,696	\$18,026	\$21,833
South Atlantic.....	1,847	2,012	2,592	4,012	5,000	7,338	8,811	8,136	(S)	10,692	12,885
Delaware.....	(T)	(T)	(T)	(T)	(T)	(D)	(D)	(D)	(D)	1,181 (S)	1,077 (S)
Maryland.....	452	382	424	(T)	(T)	1,548	1,292	1,093	1,376	2,076	1,075
District of Columbia.....	8	8	33	(T)	(T)	(D)	(D)	(D)	46	540 (S)	672 (S)
Virginia.....	264	318	464	539	941	862	1,284	1,131	1,275	1,087	1,577
West Virginia.....	(T)	(T)	(T)	(T)	(T)	(D)	83	(D)	(D)	100 (S)	243
North Carolina.....	253	268	327	546	786	(D)	1,666	1,311	1,470	1,929	2,226
South Carolina.....	87	96	82	(T)	(T)	(D)	500	388	479	495	739
Georgia.....	91	99	147	220	348	(D)	958	722	993	860	1,175
Florida.....	398	462	620	1,449	(T)	1,973	2,041	2,352	(S)	2,425	4,101
East South Central.....	427	467	402	624	1,007	1,302	2,425	1,647	1,662	1,966	2,207
Kentucky.....	79	100	209	170	191	(D)	238	227	176	289	452
Tennessee.....	282	306	(T)	(T)	(D)	621	934	843	792	1,003	
Alabama.....	56	48	62	100	187	(S)	1,523	430	596	833 (S)	686
Mississippi.....	10	13	(T)	(T)	(T)	62	42	56	(S)	52	66
West South Central.....	1,113	1,212	1,502	2,351	3,285	4,307	4,702	5,605	6,205	5,547	6,741
Arkansas.....	12	10	11	52	(T)	(D)	129	51	(S)	185	181
Louisiana.....	98	106	83	158	257	(D)	128	169	(S)	170	61
Oklahoma.....	116	142	174	339	407	(D)	367	333	448	311	288
Texas.....	887	954	1,233	(T)	(T)	3,762	4,077	5,051	5,439	4,882	6,211 (S)
West.....	6,855	7,379	10,176	11,873	17,843	25,570	26,207	30,998	(S)	36,983	40,465
Mountain.....	923	1,034	1,139	2,135	2,845	3,766	4,272	4,113	5,931	5,013	6,676
Montana.....	(T)	(T)	(T)	(T)	(T)	(D)	7	(D)	(S)	(D)	17
Idaho.....	(T)	(T)	(T)	(T)	(T)	451	467	(D)	(S)	391	827
Wyoming.....	(T)	(T)	(T)	(T)	2	3	4	(D)	2	15	25
Colorado.....	250	257	269	529	741	988	1,207	1,167	(S)	2,111	1,865
New Mexico.....	(T)	(T)	(T)	(T)	(T)	(D)	950	1,039	1,217	(D)	1,461
Arizona.....	203	200	372	758	(T)	1,079	809	921	1,080	1,042	1,356 (S)
Utah.....	112	132	142	265	242	(D)	774	389	407	411	803
Nevada.....	35	72	(T)	(T)	(S)	55	29	95	67	322	

See explanatory information and SOURCE at end of table.

Table A-48. Total (company, Federal, and other) funds for industrial R&amp;D performance in selected years by state: 1976-95

Page 3 of 3

Area	1976	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995
	[Dollars in millions]										
Pacific.....	\$5,932	\$6,345	\$9,037	\$9,738	\$14,998	\$21,804	\$21,935	\$26,884	(S)	\$31,971	\$33,789
Washington.....	610	681	(T)	(T)	(T)	2,351	2,939	2,728	\$3,677	4,689 (S)	4,294 (S)
Oregon.....	57	77	116	(T)	(T)	(D)	281	357	(S)	471	741
California.....	5,263	5,600	7,437	7,626	(T)	(S)	18,636	23,781	(S)	26,541	28,710
Alaska.....	(T)	(T)	(T)	(T)	(T)	(D)	10	9	21	14	30
Hawaii.....	(T)	(T)	(T)	(T)	(T)	13	70	9	13	255	14
Undistributed funds.....	2,030	2,291	3,245	(T)	3,931	1,495	2,281	2,945	772	714	1,773 (S)

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

(T) = Data not separately available, but are included in total.

**NOTES:** The 1993 data collected during the 1995 survey includes respondent revisions for both total R&D and state R&D allocations. Companies new to the survey may not have reported data by state on the report form they received and may not have 1993 state data on their 1995 form. For companies such as these, 1993 state data were allocated to the state in which the company's headquarters was located.

As a result of a new sample design, statistics for 1988-91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

**Table A-49. Total (company, Federal, and other) funds for industrial performance  
by state and source of funds: 1995**

Page 1 of 2

Area	Total	Federal	Company
	[Dollars in millions]		
United States, total.....	\$132,103	\$23,451	\$108,652
Alabama.....	686	273	413
Alaska.....	30	(D)	(D)
Arizona.....	1,356 (S)	620 (S)	736
Arkansas.....	181	(D)	(D)
California.....	28,710	6,925	21,785
Colorado.....	1,865	274	1,591
Connecticut.....	3,906	389	3,517
Delaware.....	1,077 (S)	12	1,065
District of Columbia.....	672 (S)	17 (S)	656
Florida.....	4,101	1,634	2,467
Georgia.....	1,175	142	1,031
Hawaii.....	14	(D)	(D)
Idaho.....	827	(D)	(D)
Illinois.....	5,776 (S)	146 (S)	5,630
Indiana.....	2,721 (S)	382	2,339
Iowa.....	998	(D)	(D)
Kansas.....	569	(D)	(D)
Kentucky.....	452	4 (S)	448
Louisiana.....	61	(D)	(D)
Maine.....	286	(D)	(D)
Maryland.....	1,075	287 (S)	788
Massachusetts.....	7,416	1,458 (S)	5,958
Michigan.....	12,388	148	12,240
Minnesota.....	2,636 (S)	315	2,321
Mississippi.....	66	(D)	(D)
Missouri.....	2,028 (S)	584 (S)	1,443
Montana.....	17	(D)	(D)
Nebraska.....	150	(D)	(D)
Nevada.....	322	(D)	(D)
New Hampshire.....	472	36	436
New Jersey.....	8,200	197	8,002
New Mexico.....	1,461	1,380	81
New York.....	8,651	1,821 (S)	6,831
North Carolina.....	2,226	15	2,212
North Dakota.....	12	(D)	(D)
Ohio.....	4,001	574	3,428
Oklahoma.....	288	38	249
Oregon.....	741	35	706
Pennsylvania.....	5,331	376 (S)	4,955
Rhode Island.....	520	(D)	(D)

See explanatory information and SOURCE at end of table.

**Table A-49. Total (company, Federal, and other) funds for industrial performance  
by state and source of funds: 1995**

Page 2 of 2

Area	Total	Federal	Company
	[Dollars in millions]		
South Carolina.....	\$739	(D)	(D)
South Dakota.....	19	0	\$19
Tennessee.....	1,003	(D)	(D)
Texas.....	6,211 (S)	\$912 (S)	5,298
Utah.....	803	178	625
Vermont.....	248	(D)	(D)
Virginia.....	1,577	743	834
Washington.....	4,294 (S)	(D)	(D)
West Virginia.....	243	(D)	(D)
Wisconsin.....	1,706	33 (S)	1,673
Wyoming.....	25	(D)	(D)
Undistributed funds.....	1,773 (S)	477 (S)	1,296

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-50. Total (company, Federal, and other) funds for industrial R&amp;D performance, by industry and size of company, for U.S. and top 10 R&amp;D-performing states: 1995

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Industry and size of company	SIC code	U.S. total	California	Michigan	New York	New Jersey	Massa- chusetts	Texas	Illinois	Penn- sylvania	Washington	Ohio	All other states plus undistri- buted
[Dollars in millions]													
All Industries.....		\$132,103	\$28,710	\$12,388	\$8,651	\$8,200	\$7,416	\$6,211 (S)	\$5,776 (S)	\$5,331	\$4,294 (S)	\$4,001	\$41,128
Distribution by industry:													
Manufacturing.....		100,067	22,354	12,004	5,966	5,610	3,573	4,769	4,498	4,247	2,983 (S)	3,373	30,690
Food, kindred, and tobacco products.....	20,21	1,566	36	(D)	86	223	(D)	6	239	44 (S)	92	28	724
Textiles and apparel.....	22,23	(D)	(D)	(D)	22	(D)	16	25	(D)	(D)	0	(D)	125
Lumber, wood products, and furniture.....	24,25	(D)	7	74	(D)	1	0	1	5	5	(D)	3	131
Paper and allied products.....	26	(D)	60 (S)	(D)	(D)	(D)	32	(D)	39	15 (S)	(D)	37	1,019
Chemicals and allied products.....	28	17,547	1,360	922	1,031	3,182	527	408	1,232 (S)	1,784	196 (S)	883	6,022
Industrial chemicals.....	281-82,286	(D)	230	(D)	72	858	147 (S)	300	147	328	(D)	351	2,481
Drugs and medicines.....	283	10,215	1,057	(D)	456	2,097	352	85	(D)	1,359	191 (S)	(D)	3,103
Other chemicals.....	284-85,287-89	(D)	73	54	504	226	28	23	(D)	97	(D)	(D)	437
Petroleum refining and extraction.....	13,29	1,760	(D)	0	59	(D)	(D)	808	(D)	(D)	0	(D)	58
Rubber products.....	30	(D)	123 (S)	34	47 (S)	24	22	26	21	40	4	585	(D)
Stone, clay, and glass products.....	32	448	20	30	7	5	(D)	9	29	128	(D)	113	105
Primary metals.....	33	593	(D)	26	13 (S)	14	3	33	28	241 (S)	6 (S)	40	(D)
Ferrous metals and products.....	331-32, 3398-99	(D)	2	19 (S)	0	5	(D)	(D)	(D)	(D)	0	(D)	(D)
Nonferrous metals and products.....	333-36	(D)	(D)	7	13 (S)	9	(D)	(D)	(D)	(D)	6 (S)	(D)	119
Fabricated metal products.....	34	1,023	83	71	34	12	116	21	66	74	3	154	389
Machinery.....	35	(D)	3,306	404	452	235	448	408 (S)	709	375	44	307	(D)
Office, computing, and accounting machines.....	357	(D)	2,700	(D)	84	85 (S)	237	(D)	25	(D)	(D)	(D)	(D)
Other machinery, except electrical.....	351-56,358-59	5,041	606	(D)	368	150	211	(D)	684	(D)	(D)	(D)	1,953

See explanatory information and SOURCE at end of table.

Table A-50. Total (company, Federal, and other) funds for industrial R&amp;D performance, by industry and size of company, for U.S. and top 10 R&amp;D-performing states: 1995

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Industry and size of company	SIC code	U.S. total	California	Michigan	New York	New Jersey	Massa- chusetts	Texas	Illinois	Penn- sylvania	Washington	Ohio	All other states plus undistri- buted
[Dollars in millions]													
Distribution by industry:													
Electrical equipment.....	36	\$18,751	\$6,786	\$409	\$597	\$410	\$1,277	\$1,533	\$1,337	\$457 (S)	\$179	\$757	\$5,008
Radio and TV receiving equipment.....	365	(D)	19	0	(D)	(D)	(D)	0	(D)	(D)	(D)	0	21
Communication equipment....	366	(D)	748	(D)	179	223 (S)	284	675	147	23	10	32	2,020
Electronic components.....	367	(D)	4,902	272	(D)	34	593	813	(D)	(D)	(D)	(D)	2,160
Other electrical equipment....	361-64,369	(D)	1,117	(D)	328	(D)	(D)	46	189	209	10	(D)	805
Transportation equipment.....	37	32,441	8,875	9,794	(D)	38	59	157	198	243	(D)	298	8,279
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	(D)	24	(D)	(D)	13	(D)	(D)	(D)	(D)	1,321
Other transportation equipment.....	373-75,379	(D)	(D)	(D)	0	(D)	(D)	0	(D)	(D)	0	(D)	286
Aircraft and missiles.....	372,376	16,951	5,096 (S)	180	(D)	(D)	(D)	144	90	(D)	(D)	32	6,673
Professional and scientific instruments.....	38	11,976	1,394	101	1,097	908 (S)	1,018	1,281 (S)	351	652	224	83	4,867
Scientific and mechanical measuring instruments.....	381-82	7,146	753	38	(D)	33	562	(D)	(D)	214 (S)	185	46	3,983
Optical, surgical, photographic, and other instruments.....	384-87	4,831	641	63 (S)	(D)	876 (S)	457	(D)	(D)	438	39	36	885
Other manufacturing industries....	27,31,39	(D)	102	6	83	63	37	(D)	60	83	10	49	337
Nonmanufacturing.....		32,036	6,356	384	2,685	2,590	3,841	1,442	1,278	1,084	1,312 (S)	628	10,436
Transportation and utilities.....	40-42,44-49	5,435	280	7	(D)	(D)	412	102	(D)	(D)	2	(D)	1,768
Communications.....	48	(D)	222	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1,509
Telephone communications.....	481	(D)	215	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1,476
Other communications.....	482-484,489	59	7	0	(D)	(D)	(D)	(D)	(D)	(D)	0	0	33

See explanatory information and SOURCE at end of table.

Table A-50. Total (company, Federal, and other) funds for industrial R&amp;D performance, by industry and size of company, for U.S. and top 10 R&amp;D-performing states: 1995

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Industry and size of company	SIC code	U.S. total	California	Michigan	New York	New Jersey	Massa- chusetts	Texas	Illinois	Penn- sylvania	Washington	Ohio	All other states plus undistri- buted
[Dollars in millions]													
Distribution by industry:													
Electric, gas, and sanitary services.....	49	\$440	(D)	\$6	\$57	\$11	(D)	(D)	\$42	\$12	(D)	\$10	\$178
Other transportation and utilities.....	40-42,44-47	(D)	(D)	(D)	(D)	(D)	\$0	(D)	(D)	(D)	\$0	0	80
Trade.....	50-59	(D)	\$1,320	(D)	1,537	64	1,234	(D)	173	34	71	21	2,425
Finance, insurance, and real estate.....	60-65,67	(D)	6	0	129 (S)	(D)	0	(D)	23	0	0	(D)	489
Services.....	701,72,73, 75-81,83,84, 87,89	17,876	4,734	360	676	1,253	2,194 (S)	\$544	231	761	1,234 (S)	355	5,534
Business services.....	73	9,293	2,325	(D)	362	1,021	591	422	162	198	1,123 (S)	(D)	2,832
Computer and data processing services.....	737	9,059	2,286	150	(D)	(D)	(D)	417	157	(D)	(D)	105	2,676
Other business services....	731-736,738	234	39	(D)	(D)	(D)	(D)	4	5	(D)	(D)	(D)	156
Health services.....	80	756	124	0	(D)	(D)	(D)	9	(D)	(D)	(D)	(D)	65
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	(D)	(D)	0	(D)	(D)	0	0	(D)	(D)	0	(D)	61
Other health services.....	802-805, 808-809	(D)	(D)	0	0	(D)	(D)	9	0	0	(D)	0	4
Engineering and management services.....	87	7,662	2,256	207	187	207	1,601 (S)	(D)	49	132	110	245	(D)
Engineering, architectural, and surveying.....	871	2,933	(D)	(D)	(D)	85	(D)	63 (S)	17	(D)	(D)	46	971
Research, development, and testing.....	873	(D)	1,836	56	136	122	416	49	28	102	74	199	(D)
Other engineering and management services...	872,874	(D)	(D)	(D)	(D)	0	(D)	(D)	4	(D)	(D)	0	9

See explanatory information and SOURCE at end of table.

Table A-50. Total (company, Federal, and other) funds for industrial R&amp;D performance, by industry and size of company, for U.S. and top 10 R&amp;D-performing states: 1995

Page 4 of 4

Industry and size of company	SIC code	U.S. total	California	Michigan	New York	New Jersey	Massachusetts	Texas	Illinois	Pennsylvania	Washington	Ohio	All other states plus undistributed
[Dollars in millions]													
Distribution by industry:													
Other services.....	701,72,75-79, 81,83,84,89	\$165	\$30	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	413	15	(D)	(D)	\$18	(D)	\$82	\$30	(D)	(D)	(D)	\$220
Distribution by size of company: [Number of employees]													
Total.....		132,103	28,710	\$12,388	\$8,651	8,200	\$7,416	6,211	5,776	\$5,331	\$4,294 (S)	\$4,001	41,128
Fewer than 500.....		16,662	6,109	839	2,089 (S)	1,039	1,519	676	608	545	650	479	2,109
500 to 999.....		4,693	1,295	123	156	185	372	203	183	139	37	190	1,810
1,000 to 4,999.....		16,960	4,176	594	648	707	1,285	580	763	547	118	411	7,131
5,000 to 9,999.....		9,532	2,594	560	337	1,142	342	359	209	616	(D)	227	(D)
10,000 to 24,999.....		17,071	3,391	598	679	1,031	230	1,171	553	1,534	(D)	657	(D)
25,000 or more.....		67,185	11,145	9,674	4,742	4,096	3,668	3,222	3,460	1,950	(D)	2,037	(D)

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

**Table A-51. Total (company, Federal, and other) funds for industrial R&D performance, by industry,  
size of company, and type of cost: 1995**

Page 1 of 2

Industry and size of company	SIC code	Total R&D costs	Wages of R&D personnel	Materials and supplies	Overhead costs
			[Percent]		
All Industries.....		\$132,103	45.1%	16.9%	38.0%
<i>Distribution by industry:</i>					
Manufacturing.....		100,067	43.3	18.3	38.4
Food, kindred, and tobacco products.....	20,21	1,566	47.7	12.2	40.1
Textiles and apparel.....	22,23	(D)	50.4	(S)	20.4
Lumber, wood products, and furniture.....	24,25	(D)	56.5	10.2	(S)
Paper and allied products.....	26	(D)	48.6	13.0	38.4 (S)
Chemicals and allied products.....	28	17,547	42.1	12.1	45.9
Industrial chemicals.....	281-82,286	(D)	45.9	13.1	40.9
Drugs and medicines.....	283	10,215	40.3	12.1	47.6
Other chemicals.....	284-85,287-89	(D)	41.5	8.9	49.6
Petroleum refining and extraction.....	13,29	1,760	47.0	14.4	38.6
Rubber products.....	30	(D)	39.8	16.0	44.2
Stone, clay, and glass products.....	32	448	48.7	10.8	40.5
Primary metals.....	33	593	50.1	18.9	31.0
Ferrous metals and products.....	331-32,3398-99	(D)	51.5	11.2	37.3
Nonferrous metals and products.....	333-36	(D)	49.2	23.7	27.1
Fabricated metal products.....	34	1,023	52.2	16.7	31.1
Machinery.....	35	(D)	52.5	18.9	28.6
Office, computing, and accounting machines.....	357	(D)	54.5	13.4	32.1
Other machinery, except electrical.....	351-56,358-59	5,041	50.9	24.7	24.3
Electrical equipment.....	36	18,751	48.6	15.6	35.9
Radio and TV receiving equipment.....	365	(D)	61.2	(S)	11.0
Communication equipment.....	366	(D)	54.8	14.1	31.1
Electronic components.....	367	(D)	49.8	14.8	35.4 (S)
Other electrical equipment.....	361-64,369	(D)	38.0	19.6	42.5
Transportation equipment.....	37	32,441	35.7	24.6	39.7
Motor vehicles and motor vehicles equipment.....	371	(D)	37.9	29.4	32.7
Other transportation equipment.....	373-75,379	(D)	66.3	21.4	(S)
Aircraft and missiles.....	372,376	16,951	32.7	20.5	(S)
Professional and scientific instruments.....	38	11,976	49.6	15.8	(S)
Scientific and mechanical measuring instruments...	381-82	7,146	47.4	15.6	(S)
Optical, surgical, photographic, and other instruments.....	384-87	4,831	53.1	16.0	30.9
Other manufacturing industries.....	27,31,39	(D)	68.3	12.8	18.9
Nonmanufacturing.....		32,036	0.5	0.1	0.4
Transportation and utilities.....	40-42,44-49	5,435	63.6	5.8	30.6
Communications.....	48	(D)	66.7	5.6	27.7
Telephone communications.....	481	(D)	66.6	5.6	27.7
Other communications.....	482-484,489	59	79.7	4.9	15.4
Electric, gas, and sanitary services.....	49	440	23.6	8.9	67.5
Other transportation and utilities.....	40-42,44-47	(D)	66.9	1.9	(S)

See explanatory information and SOURCE at end of table.

**Table A-51. Total (company, Federal, and other) funds for industrial R&D performance, by industry,  
size of company, and type of cost: 1995**

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Industry and size of company	SIC code	Total R&D costs	Wages of R&D personnel	Materials and supplies	Overhead costs
			[Percent]		
<b>Distribution by industry:</b>					
Trade.....	50-59	(D)	47.5%	10.7%	41.8%
Finance, insurance, and real estate.....	60-65,67	(D)	75.2	1.9	23.0 (S)
Services.....	701,72,73,75-81, 83,84,87,89	17,876	52.3	14.0	33.7
Business services.....	73	9,293	54.9	14.8	30.3
Computer and data processing services.....	737	9,059	54.5	14.9	30.7
Other business services.....	731-736,738	234	80.3 (S)	11.8 (S)	7.8
Health services.....	80	756	48.4	25.1	26.5
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	(D)	48.1	25.2	26.7
Other health services.....	802-805,808-809	(D)	85.9 (S)	9.6	4.5
Engineering and management services.....	87	\$7,662	49.9 (S)	11.3	38.8
Engineering, architectural, and surveying.....	871	2,933	46.7 (S)	11.9 (S)	41.4 (S)
Research, development, and testing.....	873	(D)	51.2 (S)	11.3	37.5
Other engineering and management services....	872,874	(D)	94.1	0.7	5.2
Other services.....	701,72,75-79,81, 83,84,89	165	51.6	21.1	27.3
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	413	59.6	8.8	31.6
<b>Distribution by size of company: [Number of employees]</b>					
Total.....		132,103	0.5	0.2	0.4
Fewer than 500.....		16,662	73.9	7.9	18.3
500 to 999.....		4,693	53.0	12.9	34.1
1,000 to 4,999.....		16,960	48.1	14.7	37.2
5,000 to 9,999.....		9,532	49.5	18.5	32.0
10,000 to 24,999.....		17,071	46.1	13.6	40.2
25,000 or more.....		67,185	42.1	18.6	39.3

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-52. Number of full-time-equivalent (FTE) R&amp;D scientists and engineers in R&amp;D-performing companies, by industry and size of company: 1985-96

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Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
		[In thousands]											
Total (January).....		622.5	671.0	695.8	708.6	722.5	743.6	773.4	779.3	764.7	768.5	746.1	832.8
Total (Annual average).....		646.8	683.4	702.2	715.6	733.0	758.5	776.4	772.0	766.6	758.8	789.4	NA
All Industries.....		622.5	671.0	695.8	708.6	722.5	743.6	773.4	779.3	764.7	768.5	746.1	832.8
Distribution by industry:													
Manufacturing.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	547.2	606.2
Food, kindred, and tobacco products.....	20,21	(S)	(S)	(S)	(S)	(S)	(S)	9.4	9.8	9.6	10.3	8.9	9.8
Textiles and apparel.....	22,23	2.8	2.6	2.4	2.4	2.5	2.8	(S)	2.8	3.1	3.3	2.9	3.8
Lumber, wood products, and furniture.....	24,25	(S)	(S)	1.3	1.3	1.4	(S)	(S)	1.5	1.6	3.3	2.3	2.9
Paper and allied products.....	26	6.6	6.4	6.0	6.1	6.4	8.5	(S)	10.7	10.6	10.6	10.6	11.0 (S)
Chemicals and allied products.....	28	71.1	75.8	75.2	75.8	78.3	80.4	81.6	85.6	86.5	93.1	99.6	94.3
Industrial chemicals.....	281-82,286	23.5	24.9	(S)	(S)	(S)	(S)	(S)	29.9	26.4	28.8	33.7	28.4
Drugs and medicines.....	283	30.8	31.8	32.6	33.0	34.4	34.3	35.4	38.7	42.3	48.5	50.3	49.0
Other chemicals.....	284-85,287-89	16.7	19.1	20.2	20.3	18.8	18.9	17.0	17.0	17.8	15.8	15.6	16.9
Petroleum refining and extraction.....	13,29	13.5	10.4	9.9	9.5	10.7	11.1	11.4	11.5	11.0	9.7	8.4	8.4
Rubber products.....	30	(S)	(S)	(S)	(S)	(S)	(S)	(S)	14.8	13.0	9.0	9.8	10.2
Stone, clay, and glass products.....	32	6.6	7.5	8.6	8.6	7.6	7.0	6.0	5.3	5.1	4.0	4.3	3.9
Primary metals.....	33	7.1	5.7	5.5	5.6	5.5	5.2	4.6	5.1	4.6	5.1	6.5	4.1
Ferrous metals and products.....	331-32,3398-99	4.2	2.5	(S)	2.3	2.3	(S)	(S)	1.7	1.6	2.6	1.9	1.6
Nonferrous metals and products....	333-36	2.9	3.2	3.4	3.3	3.3	3.3	3.0	(S)	(S)	2.5	4.6	2.5
Fabricated metal products.....	34	(S)	(S)	9.9	10.5	9.9	10.1	(S)	8.7	7.9	10.2	9.2	9.1
Machinery.....	35	81.7	89.7	95.8	98.4	100.4	113.3	109.7	99.3	97.4	70.4	68.6	87.3
Office, computing, and accounting machines.....	357	61.8	71.9	73.4	74.4	75.0	84.7	77.6	67.1	65.8	34.6	31.8	33.7
Other machinery, except electrical.....	351-56,3508-59	19.9	17.8	22.4	24.0	25.4	28.6	32.1	32.2	31.6	35.8	36.8	53.6
Electrical equipment.....	36	113.2	117.9	130.4	132.5	122.5	105.2	95.9	91.9	89.2	96.5	103.3	125.8
Radio and TV receiving equipment.....	365	(S)	1.8	1.2	1.3	1.5	0.8	1.0	1.0	1.0	0.8	0.9	1.3
Communication equipment.....	366	62.2	65.0	71.9	73.1	58.0	47.1	35.8	31.2	(S)	36.0 (S)	41.7 (S)	34.7 (S)
Electronic components.....	367	29.2	(S)	43.7	44.3	42.8	(S)	32.6	28.4	28.9	40.1	40.8	64.6 (S)
Other electrical equipment.....	361-64,369	17.9	16.5	13.6	(S)	(S)	21.3	(S)	31.2	28.8	19.6	20.0	25.3

See explanatory information and SOURCE at end of table

Table A-52. Number of full-time-equivalent (FTE) R&amp;D scientists and engineers in R&amp;D-performing companies, by industry and size of company: 1985-96

Page 2 of 3

Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	
		[In thousands]												
Distribution by industry:														
Transportation equipment.....	37	160.3	179.2	187.3	188.2	185.4	170.2	149.7	141.1	147.5	129.6	120.8	156.6	
Motor vehicles and motor vehicles equipment.....	371	28.7	33.9	46.5	47.3	45.8	49.4	45.3	44.5	45.1	51.0	51.1	57.0	
Other transportation equipment....	373-75,379	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	5.8 (S)	6.2	4.0	
Aircraft and missiles.....	372,376	130.2	144.8	136.3	136.4	134.8	115.3	100.2	92.9	97.9	72.8	63.5	95.5	
Professional and scientific instruments.....	38	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	100.6 (S)	84.4	70.9 (S)	
Scientific and mechanical measuring instruments.....	381-82	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	(S)	66.4 (S)	63.2	48.2 (S)	
Optical, surgical, photographic, and other instruments.....	384-87	19.8	24.0	24.6	24.9	14.5	8.1	(S)	(S)	20.8	34.2	21.2	22.7	
Other manufacturing industries.....	27,31,39	(S)	(S)	6.3	6.4	5.4	5.6	(S)	6.0	5.8	15.5	7.5	8.2	
Nonmanufacturing 1/.....		66.8	75.1	96.4	101.9	125.2	(S)	(S)	202.6	196.5	197.4	198.9	226.6	
Transportation and utilities.....	40-42,44-49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	29.3	
Communications.....	48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	25.4	
Telephone communications....	481	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	24.7	
Other communications.....	482-484,489	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.8	
Electric, gas, and sanitary services.....	49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.2 (S)	
Other transportation and utilities....	40-42,44-47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.7	
Trade.....	50-59	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	47.5	
Finance, insurance, and real estate....	60-65,67	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.6	
Services.....	701,72,73,75-81,83,84,87,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	139.6	
Business services.....	73	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80.2	
Computer and data processing services.....	737	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	77.3	
Other business services.....	731-736,738	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0	

See explanatory information and SOURCE at end of table

Table A-52. Number of full-time-equivalent (FTE) R&amp;D scientists and engineers in R&amp;D-performing companies, by industry and size of company: 1985-96

Page 3 of 3

Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	
		[In thousands]												
Distribution by industry:														
Health services.....	80	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.0
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.4
Other health services.....	802-805,808-809	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.6
Engineering and management services.....	87	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	52.9
Engineering, architectural, and surveying.....	871	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	22.8 (S)
Research, development, and testing.....	873	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	28.8
Other engineering and management services.....	872,874	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.4
Other services.....	701,72,75-79, 81,83,84,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.5
Other nonmanufacturing industries....	07-12,14,15, 161-162,17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.6
Distribution by size of company: [Number of employees]														
Total.....		622.5	671.0	695.8	708.6	722.5	743.6	773.4	779.3	764.7	768.5	746.1	832.8	
Fewer than 500.....		78.3	(S)	105.2	109.0	105.4	(S)	(S)	142.1	125.1	148.6	139.8	165.1	
500 to 999.....		16.5	(S)	18.4	19.3	18.0	18.6	18.6	46.2	46.1	27.9	29.7	36.6	
1,000 to 4,999.....		61.6	66.7	76.4	81.9	76.1	75.4	79.3	94.2	99.3	108.9	110.8	124.4	
5,000 to 9,999.....		28.5	38.9	40.5	40.2	47.3	57.2	55.1	57.6	56.4	60.3	52.8	61.1	
10,000 to 24,999.....		89.9	88.4	92.0	94.5	87.0	73.9	90.3	99.9	102.6	90.6	91.8	97.0	
25,000 or more.....		347.6	365.3	363.3	363.7	388.7	404.2	408.4	339.2	335.2	332.1	321.2	348.6	

1/ Until 1995, data were not broken down below this level of detail for most nonmanufacturing industries.

KEY: (S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.

NA = Not available

NOTE: As a result of a new sample design, statistics for 1988-91 have been revised since originally published. These statistics now better reflect R&amp;D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

**Table A-53. Number of full-time equivalent (FTE) R&D scientists and engineers in R&D-performing companies, by industry, size of company, and source of R&D funds: January 1996**

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Industry	SIC code	Total	Federal	Company
		(In thousands)		
All Industries.....		832.8	121.4 (S)	711.4
Distribution by industry:				
Manufacturing.....		606.2	100.1 (S)	506.1
Food, kindred, and tobacco products.....	20,21	9.8	0.0	9.8 (S)
Textiles and apparel.....	22,23	3.8	(D)	(D)
Lumber, wood products, and furniture.....	24,25	2.9	(D)	(D)
Paper and allied products.....	26	11.0 (S)	(D)	(D)
Chemicals and allied products.....	28	94.3	0.6 (S)	93.7
Industrial chemicals.....	281-82,286	28.4	(D)	(D)
Drugs and medicines.....	283	49.0	0.0 (S)	49.0
Other chemicals.....	284-85,287-89	16.9	(D)	(D)
Petroleum refining and extraction.....	13,29	8.4	0.0 (S)	8.4
Rubber products.....	30	10.2	(D)	(D)
Stone, clay, and glass products.....	32	3.9	(D)	(D)
Primary metals.....	33	4.1	(D)	(D)
Ferrous metals and products.....	331-32,3398-99	1.6	(D)	(D)
Nonferrous metals and products.....	333-36	2.5	0.0 (S)	2.5
Fabricated metal products.....	34	9.1	(D)	(D)
Machinery.....	35	87.3	0.4 (S)	86.9
Office, computing, and accounting machines.....	357	33.7	0.1 (S)	33.6
Other machinery, except electrical.....	351-56,358-59	53.6	0.2 (S)	53.4
Electrical equipment.....	36	125.8	12.8	113.0
Radio and TV receiving equipment.....	365	1.3	(D)	(D)
Communication equipment.....	366	34.7 (S)	(D)	(D)
Electronic components.....	367	64.6 (S)	(D)	(D)
Other electrical equipment.....	361-64,369	25.3	(D)	(D)
Transportation equipment.....	37	156.6	65.1 (S)	91.5 (S)
Motor vehicles and motor vehicles equipment.....	371	57.0	(D)	(D)
Other transportation equipment.....	373-75,379	4.0	(D)	(D)
Aircraft and missiles.....	372,376	95.5	62.1 (S)	33.4 (S)
Professional and scientific instruments.....	38	70.9 (S)	19.3 (S)	51.6 (S)
Scientific and mechanical measuring instruments.....	381-82	48.2 (S)	18.8 (S)	29.4
Optical, surgical, photographic, and other instruments.....	384-87	22.7	0.5 (S)	22.2 (S)
Other manufacturing industries .....	27,31,39	8.2	(D)	(D)
Nonmanufacturing .....		226.6	21.3	205.3
Transportation and utilities.....	40-42,44-49	29.3	(D)	(D)
Communications.....	48	25.4	(D)	(D)
Telephone communications.....	481	24.7	(D)	(D)
Other communications.....	482-484,489	0.8	0.0	0.8 (S)

See explanatory information and SOURCE at end of table.

**Table A-53. Number of full-time equivalent (FTE) R&D scientists and engineers in R&D-performing companies, by industry, size of company, and source of R&D funds: January 1996**

Page 2 of 2

Industry	SIC code	Total	Federal	Company
		(In thousands)		
<b>Distribution by industry:</b>				
Electric, gas, and sanitary services.....	49	3.2 (S)	(D)	(D)
Other transportation and utilities.....	40-42,44-47	0.7	(D)	(D)
Trade.....	50-59	47.5	(D)	(D)
Finance, insurance, and real estate.....	60-65,67	5.6	0.0	5.6
Services.....	701,72,73,75-81, 83,84,87,89	139.6	19.4	120.2
Business services.....	73	80.2	1.5 (S)	78.7
Computer and data processing services.....	737	77.3	(D)	(D)
Other business services.....	731-736,738	3.0	(D)	(D)
Health services.....	80	5.0	(D)	(D)
Offices and clinics of medical doctors , hospitals, medical and dental labs.....	801,806,807	4.4	(D)	(D)
Other health services.....	802-805,808-809	0.6	(D)	(D)
Engineering and management services.....	87	52.9	17.7	35.2 (S)
Engineering, architectural, and surveying.....	871	22.8 (S)	9.6	13.2 (S)
Research, development, and testing.....	873	28.8	(D)	(D)
Other engineering and management services.....	872,874	1.4	(D)	(D)
Other services.....	701,72,75-79, 81,83,84,89	1.5	(D)	(D)
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	4.6	0.0 (S)	4.6
<b>Distribution by size of company:</b>				
[Number of employees]				
Total.....		832.8	121.4 (S)	711.4
Fewer than 500.....		165.1	2.5 (S)	162.6 (S)
500 to 999.....		36.6	1.1 (S)	35.5 (S)
1,000 to 4,999.....		124.4	3.8	120.6
5,000 to 9,999.....		61.1	1.1	60.0
10,000 to 24,999.....		97.0	12.6 (S)	84.4
25,000 or more.....		348.6	100.2 (S)	248.4

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-54. Cost per R&amp;D scientist or engineer in R&amp;D-performing companies, by industry and size of company: 1985-95

Page 1 of 4

Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
		[Cost in dollars]										
All Industries.....		\$130,200	\$128,500	\$128,800	\$132,300	\$134,500	\$141,300	\$148,600	\$157,912	\$153,336	\$157,601	\$167,339
Distribution by industry:												
Manufacturing.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	173,523
Food, kindred, and tobacco products.....	20,21	(D)	(D)	(S)	(D)	(D)	(D)	130,000	144,215	135,261	153,609	167,017
Textiles and apparel.....	22,23	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Lumber, wood products, and furniture.....	24,25	116,300	(S)	(S)	(D)	(S)	(S)	(D)	(D)	(D)	(D)	(D)
Paper and allied products.....	26	(D)	(D)	(D)	(D)	(S)	(S)	(D)	(D)	(D)	(D)	(D)
Chemicals and allied products.....	28	116,300	117,100	125,000	139,400	149,000	159,000	167,600	183,508	(D)	(D)	180,971
Industrial chemicals.....	281-82,286	144,600	150,200	(S)	(S)	(S)	(S)	181,000	193,871	(D)	(D)	(D)
Drugs and medicines.....	283	(D)	113,600	(D)	142,800	(D)	(D)	(D)	196,631	202,607	195,145	205,637
Other chemicals.....	284-85,287-89	(D)	83,100	(D)	105,600	(D)	(D)	(D)	135,423	(D)	(D)	(D)
Petroleum refining and extraction...	13,29	(D)	(D)	187,400	182,700	194,000	201,800	217,000	205,318	208,360	209,439	209,495
Rubber products.....	30	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stone, clay, and glass products.....	32	(D)	118,000	122,500	(D)	(D)	(D)	(D)	(D)	137,990	141,842	110,172
Primary metals.....	33	(D)	(D)	131,500	118,600	(S)	(D)	142,200	114,057	138,552	116,556	111,743
Ferrous metals and products.....	331-32, 3398-99	(D)	(D)	(D)	(S)	(D)	(D)	(D)	138,851	(D)	(D)	(D)
Nonferrous metals and products.....	333-36	136,400	138,800	(D)	(S)	(D)	(D)	(D)	138,326 (S)	(D)	(D)	(D)
Fabricated metal products.....	34	112,900	(S)	76,600	88,100	(S)	(S)	115,500	123,828	129,131	113,168	112,010
Machinery.....	35	142,500	(D)	(D)	(D)	130,000	138,500	147,800	152,797	100,631	118,717	(D)
Office, computing, and accounting machines.....	357	(D)	(D)	(D)	(D)	(D)	(D)	(D)	99,564	126,476	(D)	
Other machinery, except electrical.....	351-56,358-59	(D)	119,200	98,300	99,400	(D)	(D)	(D)	102,213	111,691	111,421	
Electrical equipment.....	36	124,900	120,700	124,300	124,100	132,400	142,800	147,100	150,118	144,725	151,872	163,626
Radio and TV receiving equipment.....	365	(D)	88,700	97,900	124,200	103,400	113,200	(D)	(D)	(D)	(D)	(D)
Communication equipment.....	366	147,800	141,300	155,300	160,300	170,600	177,100	(S)	(D)	(D)	(D)	(D)
Electronic components.....	367	114,100	(D)	98,400	(S)	(S)	128,400	(D)	127,801	154,366	148,761	(D)
Other electrical equipment.....	361-64,369	(D)	(D)	(S)	68,500	(S)	(S)	(D)	(D)	(D)	(D)	(D)

See explanatory information and SOURCE at end of table.

Table A-54. Cost per R&amp;D scientist or engineer in R&amp;D-performing companies, by industry and size of company: 1985–95

Page 2 of 4

Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	
		[Cost in dollars]											
Distribution by industry:													
Transportation equipment.....	37	(D)	\$170,700	\$183,400	\$195,600	\$211,700	\$215,700	\$189,400	\$191,274	\$196,777	\$228,881	\$233,968	
Motor vehicles and motor vehicles equipment.....	371	\$223,100	(D)	(D)	(D)								
Other transportation equipment.....	373-75,379	(D)	(S)	(S)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	
Aircraft and missiles.....	372,376	161,700	149,800	180,400	193,300	207,300	213,700	177,000	180,552	176,450	217,219	213,328	
Professional and scientific instruments.....	38	122,000	(S)	115,180 (S)	119,693	154,251							
Scientific and mechanical measuring instruments.....	381-82	(D)	(D)	(D)	(S)	(S)	(S)	(S)	(S)	94,036 (S)	102,570	128,237	
Optical, surgical, photographic, and other instruments.....	384-87	(D)	(D)	(D)	316,700	(S)	(S)	(S)	(S)	161,721	161,435	220,383	
Other manufacturing industries.....	27,31,39	(D)	(S)	(D)	(D)	(D)							
Nonmanufacturing 1/.....	94,600	86,800	69,100	74,900	(S)	(S)	137,400	152,411	159,188	142,125	150,578		
Transportation and utilities.....	40-42,44-49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	370,933	
Communications.....	48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	
Telephone communications.....	481	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	
Other communications.....	482-484,489	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	157,435	
Electric, gas, and sanitary services.....	49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	274,704 (S)	
Other transportation and utilities.....	40-42,44-47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	
Trade.....	50-59	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	
Finance, insurance, and real estate.....	60-65,67	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	
Services.....	701,72,73, 75-81,83,84, 87,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	256,085	
Business services.....	73	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	231,680	
Computer and data processing services.....	737	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	234,483	
Other business services.....	731-736,738	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	158,453	

See explanatory information and SOURCE at end of table.

Table A-54. Cost per R&amp;D scientist or engineer in R&amp;D-performing companies, by industry and size of company: 1985-95

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Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	
		[Cost in dollars]											
Distribution by industry:													
Health services.....	80	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	\$305,132
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)
Other health services.....	802-805, 808-809	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)
Engineering and management services.....	87	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	289,459
Engineering, architectural, and surveying.....	871	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	257,067 (S)
Research, development, and testing.....	873	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)
Other engineering and management services.....	872,874	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)
Other services.....	701,72,75-79, 81,83,84,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	221,147
Other nonmanufacturing industries..	07-12,14,15, 161-162,17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	179,020

See explanatory information and SOURCE at end of table.

Table A-54. Cost per R&amp;D scientist or engineer in R&amp;D-performing companies, by industry and size of company: 1985–95

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Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
		[Cost in dollars]										
Distribution by size of company: [Number of employees]												
Total.....		\$130,200	\$128,500	\$128,800	\$132,300	\$134,500	\$141,300	\$148,600	\$157,912	\$153,336	\$157,601	\$167,339
Fewer than 500.....		(S)	70,600	66,800	67,100	66,200	(S)	103,400	111,358	106,888	85,793	109,319
500 to 999.....		(S)	103,400	92,600	(S)	98,200	(S)	178,700	176,585	87,233	138,366	141,660
1,000 to 4,999.....		97,300	106,400	91,900	100,600	101,900	91,400	119,400	127,135	128,565	139,693	144,213
5,000 to 9,999.....		119,300	108,400	102,900	100,400	102,500	110,800	150,800	148,285	156,899	152,227	167,284
10,000 to 24,999.....		124,600	122,300	132,700	143,000	127,300	135,300	167,300	156,190	160,229	182,243	180,849
25,000 or more.....		155,300	154,300	157,700	160,700	168,200	193,700	180,100	182,839	184,804	195,890	200,606

1/ Until 1995, data were not broken down below this level of detail for most nonmanufacturing industries.

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.

NA = Not available.

**NOTES:** The number of full-time-equivalent R&D scientists and engineers used to estimate the cost per R&D scientist or engineer is the arithmetic mean of the numbers of R&D scientists and engineers reported for January in two consecutive years. This number is then divided into the total R&D expenditures of the earlier years, and the ratio is attributed to the earlier year.

As a result of a new sample design, statistics for 1988–91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

Table A-55. Cost per R&amp;D scientist or engineer in R&amp;D performing companies, by industry and size of company: 1995

Page 1 of 3

Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[Cost in dollars]					
All Industries.....		\$167,339	\$109,319	\$141,660	\$144,213	\$167,284	\$180,849	\$200,606
Manufacturing.....		173,523	98,400	130,670	151,986	167,780	184,737	202,332
Food, kindred, and tobacco products.....	20,21	167,017	122,953	107,621	122,414	157,881 (S)	212,459	200,490
Textiles and apparel.....	22,23	(D)	71,427	187,772	122,877	150,368	104,801 (S)	(D)
Lumber, wood products, and furniture.....	24,25	(D)	73,966	76,315	96,588	81,134 (S)	(D)	(D)
Paper and allied products.....	26	(D)	85,086	148,439	179,429	137,594 (S)	90,201 (S)	142,090 (S)
Chemicals and allied products.....	28	180,971	69,543	135,714	193,701	175,005	198,451	195,126
Industrial chemicals.....	281-82,286	(D)	49,002	130,226	202,983	145,381	226,099	(D)
Drugs and medicines.....	283	205,637	108,945	165,281	218,021	(D)	207,293	208,916
Other chemicals.....	284-85,287-89	(D)	63,044	104,476	118,790	156,273 (S)	(D)	(D)
Petroleum refining and extraction.....	13,29	209,495	79,518	(D)	184,313	(D)	263,346	189,794
Rubber products.....	30	(D)	79,214	167,775	154,307	135,025 (S)	133,469 (S)	(D)
Stone, clay, and glass products.....	32	110,172	53,032	131,191 (S)	93,695	158,568 (S)	143,933	(D)
Primary metals.....	33	111,743	34,281	50,600	122,665 (S)	150,242	177,791	(D)
Ferrous metals and products.....	331-32,3398-99	(D)	57,112	64,449	90,689 (S)	154,711	(D)	(D)
Nonferrous metals and products.....	333-36	(D)	30,869	48,984	157,998	(D)	(D)	(D)
Fabricated metal products.....	34	112,010	65,092	104,640	96,859	(D)	169,888	(D)
Machinery.....	35	(D)	73,190 (S)	127,839	130,122	142,853	199,544	(D)
Office, computing, and accounting machines.....	357	(D)	105,300	135,692	149,962	179,995	(D)	(D)
Other machinery, except electrical.....	351-56,358-59	111,421	66,183 (S)	123,737	108,545	100,935 (S)	173,106	(D)
Electrical equipment.....	36	163,626	128,774	152,274	140,059	256,198	173,441 (S)	173,789 (S)
Radio and TV receiving equipment.....	365	(D)	77,750	126,338	120,711 (S)	0	0	0
Communication equipment.....	366	(D)	111,605	170,133	110,366	(D)	(D)	(D)
Electronic components.....	367	(D)	147,950	150,669	176,337	285,667	(D)	(D)
Other electrical equipment.....	361-64,369	(D)	125,365	111,627	136,759	210,359	95,493	(D)

See explanatory information and SOURCE at end of table.

Table A-55. Cost per R&amp;D scientist or engineer in R&amp;D performing companies, by industry and size of company: 1995

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Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[Cost in dollars]					
Transportation equipment.....	37	\$233,968	\$73,983	\$95,470 (S)	\$142,906	\$135,496 (S)	\$130,119 (S)	\$247,328
Motor vehicles and motor vehicles equipment.....	371	(D)	112,093	35,812	126,117	150,651	145,244 (S)	(D)
Other transportation equipment.....	373-75,379	(D)	(D)	(D)	145,460	(D)	(D)	(D)
Aircraft and missiles.....	372,376	213,328	46,776	(D)	155,907	178,336 (S)	(D)	220,787 (S)
Professional and scientific instruments.....	38	154,251 (S)	140,362	117,637	178,518	213,877	(D)	146,731 (S)
Scientific and mechanical measuring instruments.....	381-82	128,237 (S)	131,798	105,577	171,139	(D)	(D)	116,330 (S)
Optical, surgical, photographic, and other instruments.....	384-87	220,383	155,434	137,329	188,304	219,816	(D)	(D)
Other manufacturing industries.....	27,31,39	(D)	82,091	98,738	95,845	108,325 (S)	157,507 (S)	(D)
Nonmanufacturing.....		150,578	120,007	164,351	122,402	165,798	164,778	192,914
16								
Transportation and utilities.....	40-42,44-49	NA	NA	NA	NA	NA	NA	NA
Communications.....	48	NA	NA	NA	NA	NA	NA	NA
Telephone communications.....	481	NA	NA	NA	NA	NA	NA	NA
Other communications.....	482-484,489	NA	NA	NA	NA	NA	NA	NA
Electric, gas, and sanitary services.....	49	NA	NA	NA	NA	NA	NA	NA
Other transportation and utilities.....	40-42,44-47	NA	NA	NA	NA	NA	NA	NA
Trade.....	50-59	NA	NA	NA	NA	NA	NA	NA
Finance, insurance, and real estate.....	60-65,67	NA	NA	NA	NA	NA	NA	NA
Services.....	701,72,73,75- 81,83,84,87,89	NA	NA	NA	NA	NA	NA	NA
Business services.....	73	NA	NA	NA	NA	NA	NA	NA
Computer and data processing services.....	737	NA	NA	NA	NA	NA	NA	NA
Other business services.....	731-736,738	NA	NA	NA	NA	NA	NA	NA

See explanatory information and SOURCE at end of table.

Table A-55. Cost per R&amp;D scientist or engineer in R&amp;D performing companies, by industry and size of company: 1995

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Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[Cost in dollars]					
Health services.....	80	NA	NA	NA	NA	NA	NA	NA
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	NA	NA	NA	NA	NA	NA	NA
Other health services.....	802-805,808-809	NA	NA	NA	NA	NA	NA	NA
Engineering and management services...	87	NA	NA	NA	NA	NA	NA	NA
Engineering, architectural, and surveying.....	871	NA	NA	NA	NA	NA	NA	NA
Research, development, and testing.....	873	NA	NA	NA	NA	NA	NA	NA
Other engineering and management services.....	872,874	NA	NA	NA	NA	NA	NA	NA
Other services.....	701,72,75- 81,83,84,89	NA	NA	NA	NA	NA	NA	NA
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	NA	NA	NA	NA	NA	NA	NA

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.

NA = Not available.

NOTES: The number of full-time-equivalent R&D scientists and engineers used to estimate the cost per R&D scientist or engineer is the arithmetic mean of the numbers of R&D scientists and engineers reported for January in two consecutive years. This number is then divided into the total R&D expenditures of the earlier years, and the ratio is attributed to the earlier year.

Data for nonmanufacturing industries are not available because data for these industries were not collected in 1994.

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-56. Cost per R&amp;D scientist or engineer in R&amp;D-performing companies ranked by size of R&amp;D program: 1985-95

Page 1 of 1

Companies ranked by size of R&D program	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
First 4.....	\$225,800	\$225,900	\$222,600	\$226,200	\$218,100	\$219,600	\$213,200	\$202,492	\$252,629	\$218,906	\$234,791
Next 4.....	176,200	171,400	196,900	210,700	225,800	249,000	223,700	238,950	199,559	245,626 (S)	188,928 (S)
Next 12.....	132,500	131,200	141,600	153,000	148,700	129,100	159,900	170,276	199,118	188,437	190,548
Next 20.....	144,000	125,600	146,300	154,500	132,500	145,800	(S)	(S)	(S)	182,699	204,159
Next 60.....	124,100	139,000	128,700	141,300	145,400	164,200	170,500	181,760	193,925	181,163	196,023
Next 100.....	122,800	146,700	128,600	137,300	141,900	137,000	169,000	173,101	138,227	174,524	162,707
Next 200.....	94,100	138,000	110,800	124,500	106,100	120,200	121,000	126,545	140,292	156,025	152,977
Average of above 400 R&D performing companies.....	144,400	160,400	153,100	160,600	161,500	161,200	169,000	158,098	154,814	174,536	167,339

KEY: (S) = Indicates imputation of more than 50 percent. Prior to 1993, data have been withheld.

NOTES: The number of full-time-equivalent R&D scientists and engineers used to estimate the cost per R&D scientist or engineer is the arithmetic mean of the numbers of R&D scientists and engineers reported for January in two consecutive years. This number is then divided into the total R&D expenditures of the earlier year, and the ratio is attributed to the earlier year.

As a result of a new sample design, statistics for 1988-91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-57. Domestic employment of R&amp;D-performing companies, by industry and size of company: 1994–95

Page 1 of 5

Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[In thousands]					
1994								
All Industries.....		17,443	2,316	706	2,756	1,748	2,989	6,929
Manufacturing.....		11,678	1,659	582	2,057	1,231	2,081	4,071
Food, kindred, and tobacco products.....	20,21	1,103	46	85	180	140	180	472
Textiles and apparel.....	22,23	446	31	(D)	137	47	155	(D)
Lumber, wood products, and furniture.....	24,25	337	42	22	82	61	(D)	(D)
Paper and allied products.....	26	696	170	8	79	72	165	203
Chemicals and allied products.....	28	1,225	105	46	183	143	341	407
Industrial chemicals.....	281-82,286	548	40	30	58	41	125	254
Drugs and medicines.....	283	382	28	(D)	61	38	136	(D)
Other chemicals.....	284-85,287-89	295	37	(D)	64	64	80	(D)
Petroleum refining and extraction.....	13,29	376	8	5	40	21	112	190
Rubber products.....	30	456	154	(D)	113	43	38	(D)
Stone, clay, and glass products.....	32	221	17	13	43	34	(D)	(D)
Primary metals.....	33	482	44	34	109	117	81	98
Ferrous metals and products.....	331-32,3398-99	279	24	12	76	88	(D)	(D)
Nonferrous metals and products.....	333-36	204	20	22	33	29	(D)	(D)
Fabricated metal products.....	34	612	186	39	183	(D)	146	(D)
Machinery.....	35	1,143	315	99	275	146	197	111
Office, computing, and accounting machines.....	357	201	30	15	62	39	(D)	(D)
Other machinery, except electrical.....	351-56,358-59	942	285	84	213	108	(D)	(D)
Electrical equipment.....	36	1,433	241	63	237	82	222	587
Radio and TV receiving equipment.....	365	21	7	3	12	0	0	0
Communication equipment.....	366	312	45	12	53	(D)	(D)	(D)
Electronic components.....	367	383	107	22	79	(D)	(D)	(D)
Other electrical equipment.....	361-64,369	717	82	27	93	28	148	340

See explanatory information and SOURCE at end of table.

Table A-57. Domestic employment of R&amp;D-performing companies, by industry and size of company: 1994–95

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Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[In thousands]					
1994								
Transportation equipment.....	37	1,812	51	42	144	121	161	1,293
Motor vehicles and motor vehicles equipment.....	371	1,032	18	34	85	(D)	(D)	(D)
Other transportation equipment.....	373-75,379	148	20	6	20	(D)	(D)	(D)
Aircraft and missiles.....	372,376	632	12	3	39	35	52	492
Professional and scientific instruments.....	38	791	159	49	144	67	40	333
Scientific and mechanical measuring instruments....	381-82	414	64	(D)	49	32	(D)	210
Optical, surgical, photographic, and other instruments.....	384-87	377	96	(D)	95	35	(D)	123
Other manufacturing industries.....	27,31,39	544	90	(D)	108	105	156	(D)
Nonmanufacturing 1/.....		5,765	657	124	699	517	908	2,858
Transportation and utilities.....	40-42,44-49	NA	NA	NA	NA	NA	NA	NA
Communications.....	48	NA	NA	NA	NA	NA	NA	NA
Telephone communications.....	481	NA	NA	NA	NA	NA	NA	NA
Other communications.....	482-484,489	NA	NA	NA	NA	NA	NA	NA
Electric, gas, and sanitary services.....	49	NA	NA	NA	NA	NA	NA	NA
Other transportation and utilities.....	40-42,44-47	NA	NA	NA	NA	NA	NA	NA
Trade.....	50-59	NA	NA	NA	NA	NA	NA	NA
Finance, insurance, and real estate.....	60-65,67	NA	NA	NA	NA	NA	NA	NA
Services.....	701,72,73,75-81, 83,84,87,89	NA	NA	NA	NA	NA	NA	NA
Business services.....	73	NA	NA	NA	NA	NA	NA	NA
Computer and data processing services.....	737	NA	NA	NA	NA	NA	NA	NA
Other business services.....	731-736,738	NA	NA	NA	NA	NA	NA	NA
Health services.....	80	NA	NA	NA	NA	NA	NA	NA
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	NA	NA	NA	NA	NA	NA	NA
Other health services.....	802-805,808-809	NA	NA	NA	NA	NA	NA	NA

See explanatory information and SOURCE at end of table.

Table A-57. Domestic employment of R&amp;D-performing companies, by industry and size of company: 1994–95

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Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[In thousands]					
1994								
Engineering and management services.....	87	NA	NA	NA	NA	NA	NA	NA
Engineering, architectural, and surveying.....	871	NA	NA	NA	NA	NA	NA	NA
Research, development, and testing.....	873	NA	NA	NA	NA	NA	NA	NA
Other engineering and management services.....	872,874	NA	NA	NA	NA	NA	NA	NA
Other services.....	701,72,75–79,81, 83,84,89	NA	NA	NA	NA	NA	NA	NA
Other nonmanufacturing industries.....	07–12,14,15, 161–162,17	NA	NA	NA	NA	NA	NA	NA
1995								
All Industries.....		17,759	1,935	835	2,735	1,916	2,649	7,689
Manufacturing.....		11,220	1,279	570	2,121	1,250	1,994	4,008
Food, kindred, and tobacco products.....	20,21	1,017	66	29	196	84	182	459
Textiles and apparel.....	22,23	387	27	30	96	(D)	141	(D)
Lumber, wood products, and furniture.....	24,25	234	39	23	76	47	(D)	(D)
Paper and allied products.....	26	547	14	11	89	50	146	237
Chemicals and allied products.....	28	1,211	109	45	207	283	288	278
Industrial chemicals.....	281–82,286	424	25	27	74	35	136	127
Drugs and medicines.....	283	348	21	7	64	22	(D)	(D)
Other chemicals.....	284–85,287–89	439	64	10	70	227	(D)	(D)
Petroleum refining and extraction.....	13,29	324	7	(D)	33	(D)	142	127
Rubber products.....	30	485	127	53	124	52	(D)	(D)
Stone, clay, and glass products.....	32	173	25	18	52	19	58	0
Primary metals.....	33	465	22	24	133	104	77	104
Ferrous metals and products.....	331–32,3398–99	264	6	8	86	(D)	(D)	(D)
Nonferrous metals and products.....	333–36	200	16	16	47	(D)	(D)	(D)

See explanatory information and SOURCE at end of table.

Table A-57. Domestic employment of R&amp;D-performing companies, by industry and size of company: 1994–95

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Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[In thousands]					
1995								
Fabricated metal products.....	34	593	139	49	137	57	212	0
Machinery.....	35	1,172	224	95	306	157	200	191
Office, computing, and accounting machines.....	357	195	23	11	59	44	(D)	(D)
Other machinery, except electrical.....	351–56,358–59	977	201	85	246	113	(D)	(D)
Electrical equipment.....	36	1,384	178	80	274	101	173	579
Radio and TV receiving equipment.....	365	23	6	2	15	0	0	0
Communication equipment.....	366	236	47	21	55	(D)	(D)	(D)
Electronic components.....	367	454	58	30	108	(D)	(D)	(D)
Other electrical equipment.....	361–64,369	671	66	26	96	41	91	350
Transportation equipment.....	37	2,009	65	30	145	103	136	1,530
Motor vehicles and motor vehicles equipment.....	371	1,069	55	25	105	64	(D)	(D)
Other transportation equipment.....	373–75,379	153	(D)	3 (S)	19	0	55	(D)
Aircraft and missiles.....	372,376	786	(D)	2	21	38	(D)	700
Professional and scientific instruments.....	38	710	163	(D)	149	63	(D)	246
Scientific and mechanical measuring instruments....	381–82	358	91	(D)	54	18	(D)	(D)
Optical, surgical, photographic, and other instruments.....	384–87	352	72	40	95	45	(D)	(D)
Other manufacturing industries.....	27,31,39	512	73	19	103	73	152	91
Nonmanufacturing .....		6,538	656	265	614	666	655	3,681
Transportation and utilities.....	40–42,44–49	2,061	(D)	(D)	158	132	222	1,525
Communications.....	48	895	3	(D)	46	(D)	0	840
Telephone communications.....	481	887	(D)	0	(D)	(D)	0	840
Other communications.....	482–484,489	8	(D)	(D)	(D)	0	0	0
Electric, gas, and sanitary services.....	49	501	(D)	0	103	119	(D)	(D)
Other transportation and utilities.....	40–42,44–47	664	(D)	0	9	(D)	(D)	(D)
Trade.....	50–59	1,869	303	16	137	259	91	1,063
Finance, insurance, and real estate.....	60–65,67	415	(D)	44	47	115	(D)	(D)

See explanatory information and SOURCE at end of table.

Table A-57. Domestic employment of R&amp;D-performing companies, by industry and size of company: 1994–95

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Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[In thousands]					
1995								
Services.....	701,72,73,75-81, 83,84,87,89	1,865	307	73	238	122	269	855
Business services.....	73	1,258	155	50	155	67	112	720
Computer and data processing services.....	737	518	133	(D)	130	46	(D)	85
Other business services.....	731-736,738	740	22	(D)	25	21	(D)	634
Health services.....	80	140	29	(D)	15	0	52	(D)
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	116	26	(D)	8	0	(D)	(D)
Other health services.....	802-805,808-809	24	3	(D)	7 (S)	0	(D)	0
Engineering and management services.....	87	324	107	(D)	53	23	59	(D)
Engineering, architectural, and surveying.....	871	202	42	11	42	(D)	(D)	(D)
Research, development, and testing.....	873	73	50	4	(D)	0	(D)	0
Other engineering and management services.....	872,874	49	15	(D)	(D)	(D)	(D)	0
Other services.....	701,72,75-79,81,	142	17	(D)	16	31	47	(D)
Other nonmanufacturing industries .....	07-12,14,15, 161-162,17	329	20	(D)	34	38	(D)	(D)

1/ Until 1995, data were not broken down below this level of detail for most nonmanufacturing industries.

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

NA = Not available.

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-58. R&amp;D scientists and engineers per 1,000 employees in R&amp;D-performing companies, by industry and size of company: 1985–95

Page 1 of 3

Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
All Industries 1/.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	44	47
Distribution by industry:												
Manufacturing.....		43	45	45	46	46	47	50	51	52	47	54
Food, kindred, and tobacco products.....	20,21	8	7	7	8	8	8	9	9	9	8	10
Textiles and apparel.....	22,23	5	4	4	(S)	(S)	6	7	8	7	7	10
Lumber, wood products, and furniture.....	24,25	6	5	5	5	5	6	5	6	16	7	12
Paper and allied products.....	26	13	11	11	11	13	16	17	19	19	15	20 (S)
Chemicals and allied products.....	28	57	70	68	69	69	69	69	71	80	84	78
Industrial chemicals.....	281-82,286	39	56	52	54	56	59	60	61	58	63	67
Drugs and medicines.....	283	81	98	98	94	92	96	95	116	138	141	141
Other chemicals.....	284-85,287-89	62	63	61	60	60	53	53	43	51	53	38
Petroleum refining and extraction.....	13,29	21	19	20	24	26	26	26	27	27	23	26
Rubber products.....	30	26	25	19	(S)	26	32	38	33	24	21	21
Stone, clay, and glass products.....	32	20	20	24	26	26	24	24	23	21	19	22
Primary metals.....	33	12	11	12	12	12	11	11	11	11	14	9
Ferrous metals and products.....	331-32,3398-99	11	7	9	9	8	7	7	7	9	7	6
Nonferrous metals and products.....	333-36	16	17	16	17	16	15	(S)	(S)	15	23	12
Fabricated metal products.....	34	(S)	(S)	17	17	(S)	20	19	16	21	15	15
Machinery.....	35	60	64	67	66	71	73	74	74	61	59	75
Office, computing, and accounting machines.....	357	99	107	115	114	126	131	137	139	124	157	173
Other machinery, except electrical.....	351-56,358-59	29	26	29	29	31	33	36	37	41	39	55
Electrical equipment.....	36	53	59	65	71	68	66	67	65	75	75	91
Radio and TV receiving equipment.....	365	23	55	45	45	44	30	30	28	51	43	56
Communication equipment.....	366	62	68	73	94	96	89	91	(S)	(S)	153 S	147 (S)
Electronic components.....	367	81	82	86	100	96	89	95	92	122	104	142 (S)
Other electrical equipment.....	361-64,369	30	26	28	26	30	38	43	44	31	29	38
Transportation equipment.....	37	71	69	68	72	71	68	73	76	70	68	78
Motor vehicles and motor vehicles equipment.....	371	28	38	42	41	41	43	49	51	54	50	53
Other transportation equipment.....	373-75,379	8	23	38	40	52	45	(S)	(S)	(S)	43	26
Aircraft and missiles.....	372,376	116	99	91	103	101	96	98	101	94	108	121

See explanatory information and SOURCE at end of table.

Table A-58. R&amp;D scientists and engineers per 1,000 employees in R&amp;D-performing companies, by industry and size of company: 1985–95

Page 2 of 3

Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Distribution by industry:												
Professional and scientific instruments.....	38	(S)	(S)	71	62	59	71	(S)	(S)	(S)	99	100 (S)
Scientific and mechanical measuring instruments.....	381–82	(S)	(S)	85	84	96	95	(S)	(S)	(S)	127	135 (S)
Optical, surgical, photographic, and other instruments.....	384–87	70	61	63	48	28	17	(S)	59	98	60	64
Other manufacturing industries.....	27,31,39	(S)	(S)	18	17	14	14	14	14	32	14	16
Nonmanufacturing 1/.....		NA	36	35								
Transportation and utilities.....	40–42,44–49	NA	14									
Communications.....	48	NA	28									
Telephone communications.....	481	NA	28									
Other communications.....	482–484,489	NA	96									
Electric, gas, and sanitary services.....	49	NA	6 (S)									
Other transportation and utilities.....	40–42,44–47	NA	1									
Trade.....	50–59	NA	25									
Finance, insurance, and real estate.....	60–65,67	NA	13									
Services.....	701,72,73,75–81, 83,84,87,89	NA	75									
Business services.....	73	NA	64									
Computer and data processing services.....	737	NA	149									
Other business services.....	731–736,738	NA	4									
Health services.....	80	NA	35									
Offices and clinics of medical doctors, hospitals, medical and dental labs...	801,806,807	NA	38									
Other health services.....	802–805,808–809	NA	24									
Engineering and management services.....	87	NA	163									
Engineering, architectural, and surveying.....	871	NA	113 (S)									
Research, development, and testing....	873	NA	392									
Other engineering and management services.....	872,874	NA	28									

See explanatory information and SOURCE at end of table.

Table A-58. R&amp;D scientists and engineers per 1,000 employees in R&amp;D-performing companies, by industry and size of company: 1985-95

Page 3 of 3

Industry and size of company	SIC code	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Distribution by industry:												
Other services.....	701,72,75-79,81, 83,84,89	NA	10									
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	NA	14									
Distribution by size of company: [Number of employees]												
Total 1/.....		NA	44	47								
Fewer than 500.....		NA	60	85								
500 to 999.....		NA	42	44								
1,000 to 4,999.....		NA	41	45								
5,000 to 9,999.....		NA	31	32								
10,000 to 24,999.....		NA	31	37								
25,000 or more.....		NA	48	45								

1/ Until 1995, this table included only manufacturing companies.

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.

NA = Not available.

NOTES: The number of R&amp;D scientists and engineers per 1,000 employees for 1995 is derived by dividing the arithmetic mean of scientists and engineers employed in January 1995 and January 1996 by the number of employees in all activities in March 1995. Similar procedures were used for earlier years.

As a result of a new sample design, statistics for 1988-91 have been revised since originally published. These statistics now better reflect R&amp;D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-59. R&amp;D funds per employee in R&amp;D-performing companies, by size of company: 1985–95

Page 1 of 1

Size of company [Number of employees]	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Total (company, Federal, and other) R&D funds per employee											
Total.....	\$5,148	\$5,153	\$5,338	\$5,594	\$5,920	\$6,291	\$6,842	\$7,366	\$7,225	\$6,945	\$7,439
Fewer than 500.....	3,028	5,414	5,553	5,377	5,660	6,339	7,279	7,493	8,718	6,041	8,611
500 to 999.....	2,238	3,229	3,121	2,906	3,197	3,826	(T)	14,206	5,184	5,043	5,620
1,000 to 4,999.....	2,725	3,261	3,395	3,223	3,404	3,738	4,243	4,907	5,046	5,377	6,201
5,000 to 9,999.....	2,851	2,849	3,210	3,992	4,158	4,456	4,706	5,253	5,379	4,771	4,975
10,000 to 24,999.....	3,500	3,334	3,668	3,713	3,607	4,401	5,223	5,468	5,294	5,406	6,445
25,000 or more.....	7,071	6,878	7,035	7,388	7,863	8,005	8,252	8,908	9,123	9,305	8,738
Company and other (except Federal) R&D funds per employee											
Total.....	3,383	3,503	3,562	3,844	3,607	4,401	5,322	5,839	5,834	5,682	6,118
Fewer than 500.....	2,407	4,750	4,811	4,782	5,201	5,701	6,242	6,384	7,828	5,559	7,589
500 to 999.....	1,700	2,997	2,859	2,677	3,029	3,598	(T)	13,937	4,871	4,792	5,350
1,000 to 4,999.....	2,316	2,725	2,799	2,761	2,990	3,346	3,817	4,488	4,623	5,094	5,910
5,000 to 9,999.....	2,409	2,316	2,682	3,335	3,624	4,286	4,228	4,764	4,935	4,625	4,848
10,000 to 24,999.....	2,769	2,697	2,969	3,163	3,217	3,863	4,106	4,282	4,400	4,622	5,710
25,000 or more.....	4,208	4,077	4,010	4,402	5,016	5,251	5,739	6,404	6,691	6,783	6,363

KEY: (T) = Data not separately available, but are included in total.

NOTES: Averages were derived by dividing total and company R&amp;D funds for a calendar year by employment data for March of that year.

As a result of a new sample design, statistics for 1988–91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

**Table A-60. Concentration of total employment in R&D-performing companies ranked by size of R&D program: 1987–95**

Page 1 of 1

Companies ranked by size of R&D program	1987	1988	1989	1990	1991	1992	1993	1994	1995
	[Percent]								
First 4 (1–4).....	7%	7%	7%	7%	7%	7%	6%	6%	6%
Next 4 (5–8).....	4	3	3	3	3	3	2	2	2
Next 12 (9–20).....	6	6	6	5	5	5	5	4	4
Next 20 (21–40).....	6	5	4	5	4	4	4	4	4
Next 60 (41–100).....	8	9	10	9	9	8	8	7	7
Next 100 (101–200).....	7	8	8	8	10	9	9	8	7
Next 200 (201–400).....	9	9	9	11	10	10	10	9	9
All others.....	53	53	53	52	52	47	55	59	61

**NOTE:** As a result of a new sample design, statistics for 1988–91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-1a. Trends in industrial R&amp;D performance, by source of funds, in current and constant dollars: 1953–96

Page 1 of 2

Year	Total R&D		Federal		Company 1/	
	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars
	[Dollars in millions]					
1953.....	\$3,630	\$17,988	\$1,430	\$7,086	\$2,200	\$10,902
1954.....	4,070	19,941	1,750	8,574	2,320	11,367
1955.....	4,640	22,372	2,180	10,511	2,460	11,861
1956.....	6,605	30,764	3,328	15,501	3,277	15,263
1957.....	7,731	34,856	4,335	19,545	3,396	15,311
1958.....	8,389	36,940	4,759	20,956	3,630	15,984
1959.....	9,618	41,908	5,635	24,553	3,983	17,355
1960.....	10,509	45,161	6,081	26,132	4,428	19,029
1961.....	10,908	46,338	6,240	26,508	4,668	19,830
1962.....	11,464	48,087	6,434	26,988	5,029	21,095
1963.....	12,630	52,363	7,270	30,141	5,360	22,222
1964.....	13,512	55,196	7,720	31,536	5,792	23,660
1965.....	14,185	56,831	7,740	31,010	6,445	25,821
1966.....	15,548	60,569	8,332	32,458	7,216	28,111
1967.....	16,385	61,854	8,365	31,578	8,020	30,276
1968.....	17,429	63,057	8,560	30,970	8,869	32,088
1969.....	18,308	63,262	8,451	29,202	9,857	34,060
1970.....	18,067	59,275	7,779	25,522	10,288	33,753
1971.....	18,320	57,143	7,666	23,911	10,654	33,231
1972.....	19,552	58,504	8,017	23,989	11,535	34,515
1973.....	21,249	60,195	8,145	23,074	13,104	37,122
1974.....	22,887	59,493	8,220	21,367	14,667	38,126
1975.....	24,187	57,465	8,605	20,444	15,582	37,021
1976.....	26,997	60,599	9,561	21,461	17,436	39,138
1977.....	29,825	62,882	10,485	22,106	19,340	40,776
1978.....	33,304	65,443	11,189	21,987	22,115	43,456
1979.....	38,226	69,212	12,518	22,665	25,708	46,547
1980.....	44,505	73,769	14,029	23,254	30,476	50,515
1981.....	51,810	78,488	16,382	24,817	35,428	53,671
1982.....	58,650	83,583	18,545	26,429	40,105	57,154
1983.....	65,268	89,213	20,680	28,267	44,588	60,946
1984.....	74,800	98,525	23,396	30,817	51,404	67,708
1985.....	84,239	107,270	27,196	34,631	57,043	72,638
1986.....	87,823	108,989	27,891	34,613	59,932	74,376
1987.....	92,155	110,950	30,752	37,024	61,403	73,926
1988.....	97,015	112,690	30,343	35,246	66,672	77,445
1989.....	102,055	113,748	28,554	31,826	73,501	81,923
1990.....	109,727	117,230	28,125	30,048	81,602	87,182

See explanatory information and SOURCE at end of table.

**Table A-1a. Trends in industrial R&D performance, by source of funds, in current and constant dollars: 1953–96**

Page 2 of 2

Year	Total R&D		Federal		Company 1/	
	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars
	[Dollars in millions]					
1991.....	\$116,952	\$120,173	\$26,372	\$27,098	\$90,580	\$93,074
1992.....	119,110	119,110	24,722	24,722	94,388	94,388
1993.....	117,400	114,380	22,809	22,222	94,591	92,158
1994 .....	119,595	113,802	22,463	21,375	97,131	92,426
1995.....	132,103	122,590	23,451	21,762	108,652	100,828
1996.....	144,667	131,265	23,653	21,462	121,015	109,804

1/ Company-funded R&D includes funds for industrial R&D performed within company facilities from all sources except the Federal Government. The funds predominantly are the company's own, but also include funds from outside organizations such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments. Company-financed R&D not performed within the company is excluded.

**NOTES:** 1992 gross domestic product (GDP) implicit price deflators were used to convert current dollars to constant dollars.

As a result of a new sample design, statistics for 1988–91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

Table A-2a. Summary data for R&amp;D-performing companies, by detailed industry and size of company: 1995-96

Page 1 of 4

Industry and size of company	SIC code	Research and development funds						Domestic net sales		R&D scientists and engineers		Domestic employment	
		Total		Federal		Company				January	3/	March	
		1995	1996	1995	1996	1995	1996	1995	1996	1996	1997	1995	1996
[Dollars in millions]												[In thousands]	
All Industries.....		\$132,103	\$144,667	\$23,451	\$23,653	\$108,652	\$121,015	\$3,921,561	\$4,076,076	832.8	885.7	17,759	18,102
Distribution by industry:													
Manufacturing 1/.....		100,067	111,864	18,831	20,020	81,236	91,845	2,756,605	2,765,725	(D)	(D)	11,220	11,347
Food and kindred products.....	20	(D)	(D)	0	1	(D)	(D)	(D)	330,963	(D)	(D)	(D)	1,033
Tobacco products.....	21	(D)	(D)	0	0	(D)	(D)	(D)	19,630	(D)	(D)	(D)	57
Textile mill products.....	22	(D)	(D)	(D)	(D)	276	303	29,625	38,592	2.2	2.6	281	332
Apparel.....	23	(D)	(D)	(D)	(D)	106	113	12,852	12,946	1.6	1.2	107	102
Lumber and wood products, except furniture.....	24	(D)	(D)	(D)	(D)	84	55	12,056	15,502	0.7	0.6	74	94
Furniture and fixtures.....	25	(D)	(D)	(D)	(D)	145	598	19,913	31,734	2.2 (S)	3.0 (S)	160	245
Paper and allied products.....	26	(D)	(D)	(D)	(D)	1,404	1,558	138,086	134,607	11.0 (S)	11.5 (S)	547	568
Printing, publishing, and allied industries.....	27	(D)	(D)	(D)	(D)	306	325	39,781	35,739	3.3 (S)	3.4 (S)	341	303
Chemicals and allied products.....	28	17,547	(D)	210 S)	(D)	17,337	17,698	371,302	335,642	94.3	91.8	1,211	1,069
Petroleum refining and extraction.....	13,29	1,760	1,662	6	24	1,754	1,638	245,662	249,436	8.4	9.1	324	288
Rubber products.....	30	(D)	(D)	(D)	(D)	1,210	1,334	76,816	74,124	10.2	11.5	485	472
Leather and leather products.....	31	(D)	(D)	(D)	(D)	40	41	6,534	13,463	0.3	0.3	37	48
Stone, clay, and glass products.....	32	448	517	6	5	441	512	30,363	38,899	3.9	4.4	173	197
Primary metals.....	33	593	(D)	13	(D)	580	637	115,664	103,908	4.1	5.5 (S)	465	406
Fabricated metal products.....	34	1,023	(D)	86	(D)	937	1,460	89,012	98,175	9.1	11.0	593	617
Machinery.....	35	(D)	13,685	(D)	117	9,676	13,568	269,689	264,217	87.3	92.0	1,172	1,355
Electrical equipment.....	36	18,751	22,826	1,690	2,176	17,060	20,650	315,070	338,164	125.8	140.8	1,384	1,430
Transportation.....	37	32,441	32,810	13,130	12,203	19,311	20,607	532,826	501,357	156.6	162.8 (S)	2,009	1,957
Professional and scientific instruments.....	38	11,976	13,091	3,460 S)	4,393	8,516	8,698	116,696	111,499	70.9 (S)	72.9 (S)	710	641
Miscellaneous manufacturing industries 2/.....	39	(D)	490	(D)	3	488	488	20,819	17,128	4.6	5.0	134	133

See explanatory information and SOURCE at end of table.

Table A-2a. Summary data for R&amp;D-performing companies, by detailed industry and size of company: 1995–96

Page 2 of 4

Industry and size of company	SIC code	Research and development funds						Domestic net sales		R&D scientists and engineers		Domestic employment	
		Total		Federal		Company				January 3/	March		
		1995	1996	1995	1996	1995	1996	1995	1996	1996	1997	1995	1996
[Dollars in millions]												[In thousands]	
Distribution by industry:													
Nonmanufacturing 1/.....		\$32,036	\$32,803	\$4,620	\$3,633	\$27,415	\$29,170	\$1,164,955	\$1,310,352	226.6	245.8	6,538	6,755
Agricultural services.....	07-09	NA	44	NA	0	NA	44	NA	1,068	0.5	0.4	NA	12
Mining.....	10-14	NA	77	NA	8	NA	68	NA	17,693	2.1	0.6	NA	64
Construction.....	15-17	NA	283	NA	0	NA	283	NA	13,864	2.0	3.3	NA	96
Railroad transportation.....	40	NA	34	NA	0	NA	34	NA	24,968	0.1	(D)	NA	143
Local and suburban transit and interurban highway passenger transportation.....	41	NA	0	NA	0	NA	0	NA	0	(D)	(D)	NA	0
Motor freight transportation and warehousing.....	42	NA	39	NA	0	NA	39	NA	26,267	(D)	(D)	NA	(D)
Water transportation.....	44	NA	0	NA	0	NA	0	NA	0	(D)	(D)	NA	0
Transportation by air.....	45	NA	32	NA	12	NA	20	NA	(D)	0.2	0.1 (S)	NA	(D)
Pipelines, except natural gas.....	46	NA	0	NA	0	NA	0	NA	0	0.0	0.0	NA	0
Transportation services.....	47	NA	118	NA	0	NA	118	NA	(D)	(D)	(D)	NA	7
Communications.....	48	(D)	4,103	146	133	4,756	3,970	220,446	211,857	25.4	24.7	895	826
Electric, gas, and sanitary services.....	49	440	352	93	42	347	311	168,314	182,121	3.2 (S)	4.0 (S)	501	593
Durable goods.....	50	NA	4,961	NA	37	NA	4,925	NA	104,604	40.1	34.3	NA	384
Nondurable goods.....	51	NA	901	NA	0	NA	901	NA	68,525	4.5	6.6	NA	171
Building materials, hardware, garden supply and mobile home dealers....	52	NA	4	NA	0	NA	4	NA	(D)	(D)	(D)	NA	(D)
General merchandise stores.....	53	NA	0	NA	0	NA	0	NA	0	0.0	0.0	NA	0
Food stores.....	54	NA	24	NA	0	NA	24	NA	(D)	(D)	(D)	NA	(D)
Automotive dealers and gasoline service stations.....	55	NA	0	NA	0	NA	0	NA	0	(D)	(D)	NA	0
Apparel and accessory stores.....	56	NA	10	NA	0	NA	10	NA	(D)	(D)	(D)	NA	(D)
Home furniture, furnishings and equipment stores.....	57	NA	78	NA	0	NA	78	NA	(D)	1.0 (S)	0.8 (S)	NA	(D)

See explanatory information and SOURCE at end of table.

Table A-2a. Summary data for R&amp;D-performing companies, by detailed industry and size of company: 1995-96

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Industry and size of company	SIC code	Research and development funds						Domestic net sales		R&D scientists and engineers		Domestic employment	
		Total		Federal		Company				January 3/	March	1996	1997
		1995	1996	1995	1996	1995	1996	1995	1996	1996	1997	1995	1996
[Dollars in millions]												[In thousands]	
Eating and drinking places.....	58	NA	\$141	NA	\$0	NA	\$141	NA	\$61,807	1.4 (S)	0.4 (S)	NA	683
Miscellaneous retail.....	59	NA	386	NA	0	NA	386	NA	2,553	0.1	1.8	NA	20
Depository institutions.....	60	(D)	378	\$12	0	\$710	378	\$105,961	71,801	2.3	4.4	415	327
Nondepositary credit institutions.....	61	NA	88	NA	0	NA	88	NA	6,165	(D)	(D)	NA	16
Security and commodity brokers, dealers and exchanges, and services.....	62	NA	321	NA	0	NA	321	NA	(D)	(D)	(D)	NA	(D)
Insurance carriers, agents, brokers and services.....	63,64	NA	445	NA	0	NA	445	NA	210,014	1.0	7.8	NA	343
Real estate; holding and other investment offices.....	65,67	NA	65	NA	2	NA	62	NA	(D)	0.4	0.9	NA	(D)
Hotels and personal services.....	701,72	NA	131	NA	0	NA	130	NA	7,591	0.1	0.5	NA	78
Business services.....	73	\$9,293	10,685	612	361	8,681	10,325	91,588	104,899	80.2	89.0	1,258	1,432
Automotive and miscellaneous repair, services and parking.....	75,76	NA	47	NA	0	NA	47	NA	2,541	0.4	0.4	NA	16
Motion pictures.....	78	NA	70	NA	0	NA	70	NA	(D)	(D)	(D)	NA	(D)
Amusement and recreation services....	79	NA	42	NA	0	NA	42	NA	929	0.5	(D)	NA	(D)
Health services.....	80	756	845	4	4	753	841	13,485	13,398	5.0	7.9	140	96
Legal services.....	81	NA	2	NA	0	NA	2	NA	(D)	0.0	(D)	NA	(D)
Social services.....	83	NA	5	NA	0	NA	5	NA	(D)	(D)	(D)	NA	(D)
Museums, art galleries, and botanical and zoological gardens.....	84	NA	0	NA	0	NA	0	NA	0	0.0	0.0	NA	0
Engineering and management services.....	87	7,662	8,064	3,650	3,027	4,011	5,036	98,178	76,673	52.9	50.7	312	520
Miscellaneous services 2/.....	89	NA	27	NA	7	NA	20	NA	492	0.2 (S)	0.2 (S)	NA	4

See explanatory information and SOURCE at end of table.

Table A-2a. Summary data for R&amp;D-performing companies, by detailed industry and size of company: 1995-96

Page 4 of 4

Industry and size of company	SIC code	Research and development funds						Domestic net sales		R&D scientists and engineers		Domestic employment	
		Total		Federal		Company				January	3/	March	
		1995	1996	1995	1996	1995	1996	1995	1996	1996	1997	1995	1996
Distribution by size of company: [Number of employees]		[Dollars in millions]										[In thousands]	
Total.....		\$132,103	\$144,667	\$23,451	\$23,653	\$108,652	\$121,015	\$3,921,561	\$4,076,076	832.8	885.7	17,759	18,102
Fewer than 500.....		16,662	20,249	1,978	2,301	14,684	17,948	374,478	339,405	165.1	177.3	1,935	1,831
500 to 999.....		4,693	4,637	225	219	4,468	4,418	147,062	147,701	36.6	37.7	835	806
1,000 to 4,999.....		16,960	18,273	798	512	16,162	17,761	615,336	618,426	124.4	131.6	2,735	2,838
5,000 to 9,999.....		9,532	11,537	243	468	9,289	11,068	466,186	422,915	61.1	82.2	1,916	2,041
10,000 to 24,999.....		17,071	20,164	1,946	1,031	15,125	19,133	749,478	791,806	97.0	104.9	2,649	2,734
25,000 or more.....		67,185	69,808	18,261	19,122	48,924	50,686	1,569,021	1,755,822	348.6	351.9 (S)	7,689	7,852

1/ Data for manufacturing industries are shown separately for each two-digit SIC, with the exception of SICs 13 and 29, which are combined. Until 1996, data were not broken down into this level of detail for most nonmanufacturing industries.

2/ Beginning in 1996 manufacturing companies with fewer than 50 employees and nonmanufacturing companies with fewer than 15 employees were sampled separately without regard to industry classification to minimize year-to-year variation in survey estimates. Estimates for companies in these groups are included with their respective SIC classification for this table. In other tables, they are included in "Other manufacturing industries" and in "Other nonmanufacturing industries."

3/ Data recorded in January represent employment figures for the previous year.

- KEY:**
- (D) = Data have been withheld to avoid disclosing operations of individual companies.
  - (S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.
  - NA = Not available.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

Table A-3a. Total (company, Federal, and other) funds for industrial R&amp;D performance, by industry and size of company: 1986-96

Page 1 of 3

Industry and size of company	SIC code	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
[Dollars in millions]												
All Industries.....		\$87,823	\$92,155	\$97,015	\$102,055	\$109,727	\$116,952	\$119,110	\$117,400	\$119,595	\$132,103	\$144,667
Distribution by industry:												
Manufacturing.....		80,377	84,311	86,503	88,024	88,934	88,506	90,177	86,569	90,749	100,067	111,864
Food, kindred, and tobacco products.....	20,21	(D)	1,206	(D)	(D)	(D)	1,277	1,386	1,345	1,476	1,566	1,564
Textiles and apparel.....	22,23	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Lumber, wood products, and furniture.....	24,25	144	137	(D)	192	216	(D)	(D)	(D)	(D)	(D)	(D)
Paper and allied products.....	26	(D)	(D)	(D)	879	1,059	(D)	(D)	(D)	(D)	(D)	(D)
Chemicals and allied products.....	28	8,843	9,635	11,067	12,069	13,291	14,648	15,381	(D)	(D)	17,547	(D)
Industrial chemicals.....	281-82,286	3,552	3,716	4,172	4,451	5,010	5,390	5,165	(D)	(D)	(D)	(D)
Drugs and medicines.....	283	3,658	(D)	4,906	(D)	(D)	(D)	7,944	9,146	9,633	10,215	9,773
Other chemicals.....	284-85,287-89	1,633	(D)	1,989	(D)	(D)	(D)	2,272	(D)	(D)	(D)	2,505
Petroleum refining and extraction.....	13,29	(D)	1,897	1,997	2,180	2,306	2,498	2,277	2,152	1,950	1,760	1,654
Rubber products.....	30	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stone, clay, and glass products.....	32	950	995	(D)	(D)	(D)	(D)	(D)	538	591	448	468
Primary metals.....	33	(D)	730	637	686	739	714	522	669	690	593	(D)
Ferrous metals and products.....	331-32,3398-99	(D)	(D)	253	(D)	(D)	(D)	(D)	289	(D)	(D)	(D)
Nonferrous metals and products.....	333-36	458	(D)	384	(D)	(D)	(D)	(D)	380	(D)	(D)	(D)
Fabricated metal products.....	34	895	783	881	904	939	974	1,017	1,158	1,111	1,023	(D)
Machinery.....	35	(D)	(D)	(D)	(D)	14,446	14,775	14,938	8,381	8,110	(D)	13,455
Office, computing, and accounting machines.....	357	(D)	(D)	(D)	(D)	(D)	(D)	(D)	4,950	4,106	(D)	(D)
Other machinery, except electrical.....	351-56,358-59	2,396	2,428	2,682	2,729	(D)	(D)	(D)	3,431	4,004	5,041	(D)
Electrical equipment.....	36	14,980	15,848	14,128	13,318	13,400	13,415	13,360	13,349	15,338	18,751	22,498
Radio and TV receiving equipment.....	365	133	139	149	96	114	(D)	(D)	(D)	(D)	(D)	(D)
Communication equipment.....	366	9,669	10,184	8,427	7,071	5,928	4,787	(D)	(D)	(D)	(D)	(D)
Electronic components.....	367	(D)	4,286	4,133	4,025	3,914	(D)	3,567	5,311	6,032	(D)	(D)
Other electrical equipment.....	361-64,369	(D)	1,239	1,419	2,126	3,444	(D)	(D)	(D)	(D)	(D)	(D)
Transportation equipment.....	37	31,275	34,246	34,775	33,859	31,361	27,428	27,494	27,258	28,087	32,441	32,737
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	(D)	(D)	(D)	(D)	(D)	11,718	(D)	(D)	(D)
Other transportation equipment.....	373-75,379	(D)	(D)	(D)	(D)	(D)	(D)	(D)	483	(D)	(D)	(D)
Aircraft and missiles.....	372,376	21,050	24,458	24,168	22,331	20,635	16,629	17,158	15,056	14,260	16,951	16,224

See explanatory information and SOURCE at end of table.

Table A-3a. Total (company, Federal, and other) funds for industrial R&amp;D performance, by industry and size of company: 1986–96

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Industry and size of company	SIC code	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
[Dollars in millions]												
Distribution by industry:												
Professional and scientific instruments.....	38	\$5,103	\$5,222	\$5,530	\$5,992	\$7,055	\$8,705	\$9,542	\$10,119	\$11,441	\$11,976	\$12,149
Scientific and mechanical measuring instruments.....	381-82	(D)	(D)	1,959	2,366	3,346	(D)	5,156	5,681	6,952	7,146	(D)
Optical, surgical, photographic, and other instruments.....	384-87	(D)	(D)	3,571	3,626	3,709	(D)	4,386	4,438	4,489	4,831	(D)
Other manufacturing industries 1/.....	27,31,39	382	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Nonmanufacturing 2/.....		7,446	7,844	10,513	14,031	20,793	28,446	28,933	30,831	28,846	32,036	32,803
Transportation and utilities.....	40-42,44-49	NA	NA	NA	NA	NA	NA	NA	NA	NA	5,435	4,678
Communications.....	48	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)
Telephone communications.....	481	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)
Other communications.....	482-484,489	NA	NA	NA	NA	NA	NA	NA	NA	NA	59	73
Electric, gas, and sanitary services.....	49	NA	NA	NA	NA	NA	NA	NA	NA	NA	440	352
Other transportation and utilities.....	40-42,44-47	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)
Trade.....	50-59	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	6,389
Finance, insurance, and real estate.....	60-65,67	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)
Services.....	701,72,73, 75-81,83, 84,87,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	17,876	19,022
Business services.....	73	NA	NA	NA	NA	NA	NA	NA	NA	NA	9,293	10,641
Computer and data processing services.....	737	NA	NA	NA	NA	NA	NA	NA	NA	NA	9,059	(D)
Other business services.....	731-736,738	NA	NA	NA	NA	NA	NA	NA	NA	NA	234	(D)
Health services.....	80	NA	NA	NA	NA	NA	NA	NA	NA	NA	756	(D)
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	715
Other health services.....	802-805, 808-809	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)
Engineering and management services.....	87	NA	NA	NA	NA	NA	NA	NA	NA	NA	7,662	7,318
Engineering, architectural, and surveying....	871	NA	NA	NA	NA	NA	NA	NA	NA	NA	2,933	1,660
Research, development, and testing.....	873	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	5,484
Other engineering and management services.....	872,874	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	173

See explanatory information and SOURCE at end of table.

**Table A-3a. Total (company, Federal, and other) funds for industrial R&D performance, by industry and size of company: 1986-96**

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Industry and size of company	SIC code	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
[Dollars in millions]												
Distribution by industry:												
Other services.....	701,72,75-79, 81,83,84,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	\$165	(D)
Other nonmanufacturing industries 1/.....	07-12,14,15, 161-162,17	NA	NA	NA	NA	NA	NA	NA	NA	NA	413	(D)
Distribution by size of company: [Number of employees]												
Total.....		\$87,823	\$92,155	\$97,015	\$102,055	\$109,727	\$116,952	\$119,110	\$117,400	\$119,595	132,103	\$144,667
Fewer than 500.....		7,071	7,163	(S)	7,809	(S)	13,172	13,557	14,620	13,966	16,662	20,249
500 to 999.....		1,902	1,725	1,669	1,825	2,154	8,000	7,958	3,230	3,608	4,693	4,637
1,000 to 4,999.....		7,472	7,262	7,622	7,881	8,411	10,453	11,886	13,334	14,617	16,960	18,273
5,000 to 9,999.....		4,251	4,501	5,245	5,756	6,746	8,049	8,258	9,135	8,912	9,532	11,537
10,000 to 24,999.....		10,493	12,043	11,506	10,450	12,486	15,770	15,744	15,421	15,972	17,071	20,164
25,000 or more.....		56,991	59,461	63,694	68,335	71,030	61,508	61,707	61,659	62,519	67,185	69,808

1/ Beginning in 1996 manufacturing companies with fewer than 50 employees and nonmanufacturing companies with fewer than 15 employees were sampled separately without regard to industry classification to minimize year-to-year variation in survey estimates. Estimates for manufacturing companies in this group are combined with those for companies in "Other manufacturing industries." Estimates for nonmanufacturing companies in this group are combined with those for companies in "Other nonmanufacturing industries." As a result, statistics for "Other manufacturing industries" and for "Other nonmanufacturing industries" for 1996 are not comparable with statistics for prior years.

2/ Until 1995, data were not broken down below this level of detail for most nonmanufacturing industries.

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.

NA = Not available.

**NOTE:** As a result of a new sample design, statistics for 1988-91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

Table A-4a. Total (company, Federal, and other) funds for industrial R&amp;D performance, by industry and size of company: 1996

Page 1 of 3

Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
[Dollars in millions]								
All Industries.....		\$144,667	\$20,249	\$4,637	\$18,273	\$11,537	\$20,164	\$69,808
Distribution by industry:								
Manufacturing.....		111,864	8,092	2,898	13,568	9,079	16,566	61,662
Food, kindred, and tobacco products.....	20,21	1,564	58	53	217	338	246	651
Textiles and apparel.....	22,23	(D)	60	39	173	27	112	(D)
Lumber, wood products, and furniture.....	24,25	(D)	53	21	38	68	(D)	(D)
Paper and allied products.....	26	(D)	16	20	230	70	354	(D)
Chemicals and allied products.....	28	(D)	503	288	3,384	2,491	(D)	4,720
Industrial chemicals.....	281-82,286	(D)	192	154	1,203	607	2,467	(D)
Drugs and medicines.....	283	9,773	125	76	1,661	1,564	3,614	2,732
Other chemicals.....	284-85,287-89	2,505	185	58	520	320	(D)	(D)
Petroleum refining and extraction.....	13,29	1,654	42	(D)	59	(D)	674	843
Rubber products.....	30	(D)	153	121	350	241	206	(D)
Stone, clay, and glass products.....	32	468	21	28	88	96	235	0
Primary metals.....	33	(D)	50	19	129	105	(D)	(D)
Ferrous metals and products.....	331-32,3398-99	(D)	19	(D)	64	65	(D)	(D)
Nonferrous metals and products.....	333-36	(D)	31	(D)	65	39	(D)	(D)
Fabricated metal products.....	34	(D)	187	102	187	95	458	(D)
Machinery.....	35	13,455	1,183	(D)	2,023	2,061	3,690	(D)
Office, computing, and accounting machines.....	357	(D)	404	(D)	718	1,153	2,324	(D)
Other machinery, except electrical.....	351-56,358-59	(D)	779	365	1,305	908	1,366	(D)
Electrical equipment.....	36	22,498	2,298	749	4,049	1,498	2,036	11,869
Radio and TV receiving equipment.....	365	(D)	23	11	(D)	(D)	0	0
Communication equipment.....	366	(D)	765	211	1,243	(D)	(D)	(D)
Electronic components.....	367	(D)	849	342	(D)	863	643	8,901
Other electrical equipment.....	361-64,369	(D)	661	185	502	136	(D)	(D)

See explanatory information and SOURCE at end of table.

Table A-4a. Total (company, Federal, and other) funds for industrial R&amp;D performance, by industry and size of company: 1996

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Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
Distribution by industry:			[Dollars in millions]					
Transportation equipment.....	37	\$32,737	\$57	\$116	\$390	\$812	\$438	\$30,923
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	(D)	147	(D)	325	15,036
Other transportation equipment.....	373-75,379	(D)	(D)	0	114	(D)	(D)	399
Aircraft and missiles.....	372,376	16,224	49	(D)	129	408	(D)	15,488
Professional and scientific instruments.....	38	12,149	1,088	723	2,079	(D)	(D)	6,806
Scientific and mechanical measuring instruments.....	381-82	(D)	685	547	1,000	(D)	(D)	(D)
Optical, surgical, photographic, and other instruments....	384-87	(D)	403	176	1,079	700	(D)	(D)
Other manufacturing industries 1/.....	27,31,39	(D)	2,322	(D)	171	242	138	51
Nonmanufacturing.....		32,803	12,157	1,739	4,705	2,458	3,597	8,146
183 Transportation and utilities.....	40-42,44-49	4,678	190	(D)	137	(D)	106	4,136
Communications.....	48	(D)	39	(D)	(D)	(D)	0	4,016
Telephone communications.....	481	(D)	0	0	0	(D)	0	4,016
Other communications.....	482-484,489	73	39	(D)	(D)	0	0	0
Electric, gas, and sanitary services.....	49	352	24	(D)	95	81	(D)	(D)
Other transportation and utilities.....	40-42,44-47	(D)	127	0	(D)	(D)	(D)	(D)
Trade.....	50-59	6,389	2,151	277	1,107	572	(D)	(D)
Finance, insurance, and real estate.....	60-65,67	(D)	79	7	289	211	(D)	427
Services.....	701,72,73,75-81, 83,84,87,89	19,022	8,579	(D)	3,054	1,534	3,039	(D)
Business services.....	73	10,641	3,378	907	2,697	1,475	2,138	45
Computer and data processing services.....	737	(D)	3,276	878	2,641	(D)	(D)	(D)
Other business services.....	731-736,738	(D)	102	29	56	(D)	(D)	(D)
Health services.....	80	(D)	77	(D)	32	(D)	(D)	0
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	715 (S)	72	(D)	(D)	0	(D)	0
Other health services.....	802-805,808-809	(D)	5	(D)	(D)	(D)	0	0

See explanatory information and SOURCE at end of table.

Table A-4a. Total (company, Federal, and other) funds for industrial R&amp;D performance, by industry and size of company: 1996

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Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
[Dollars in millions]								
Distribution by industry:								
Engineering and management services.....	87	\$7,318	\$5,074	\$501	\$268	(D)	(D)	(D)
Engineering, architectural, and surveying.....	871	1,660	1,155	(D)	203	(D)	(D)	\$0
Research, development, and testing.....	873	5,484	3,831	416	3	\$0	(D)	(D)
Other engineering and management services.....	872,874	173	88	(D)	62	0	(D)	0
Other services.....	701,72,75-79,81, 83,84,89	(D)	50	8	56	(D)	(D)	(D)
Other nonmanufacturing industries 1/.....	07-12,14,15, 161-162,17	(D)	1,158	17	118	44	(D)	(D)

1/ Beginning in 1996 manufacturing companies with fewer than 50 employees and nonmanufacturing companies with fewer than 15 employees were sampled separately without regard to industry classification to minimize year-to-year variation in survey estimates. Estimates for manufacturing companies in this group are combined with those for companies in "Other manufacturing industries." Estimates for nonmanufacturing companies in this group are combined with those for companies in "Other nonmanufacturing industries." As a result, statistics for "Other manufacturing industries" and for "Other nonmanufacturing industries" for 1996 are not comparable with statistics for prior years.

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**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.  
 (S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

Table A-5a. Total (company, Federal, and other) funds for industrial R&amp;D performance, by industry, size of company, and size of R&amp;D program: 1996

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Industry and size of company	SIC code	Total	Size of R&D program				
			Less than \$200,000	\$200,000 to \$999,999	\$ 1 million to \$9.9 million	\$ 10 million to \$99.9 million	\$100 million or more
[Dollars in millions]							
All Industries.....		\$144,667	\$1,160	\$3,517	\$15,068	\$25,460	\$99,463
Distribution by industry:							
Manufacturing.....		111,864	719	1,910	7,877	16,184	85,174
Food, kindred, and tobacco products.....	20,21	1,564	(D)	49	261	800	(D)
Textiles and apparel.....	22,23	(D)	(D)	49	134	214	0
Lumber, wood products, and furniture.....	24,25	(D)	16	31	54	113	(D)
Paper and allied products.....	26	(D)	(D)	(D)	244	450	(D)
Chemicals and allied products.....	28	(D)	(D)	(D)	575	2,813	14,529
Industrial chemicals.....	281-82,286	(D)	0	(D)	(D)	1,232	4,183
Drugs and medicines.....	283	9,773	(D)	0	(D)	854	8,860
Other chemicals.....	284-85,287-89	2,505	12	56	224	727	1,485
Petroleum refining and extraction.....	13,29	1,654	0	(D)	(D)	274	1,304
Rubber products.....	30	(D)	(D)	75	330	469	492
Stone, clay, and glass products.....	32	468	(D)	10	63	284	(D)
Primary metals.....	33	(D)	9	25	158	242	(D)
Ferrous metals and products.....	331-32,3398-99	(D)	(D)	(D)	72	121	0
Nonferrous metals and products.....	333-36	(D)	(D)	(D)	85	121	(D)
Fabricated metal products.....	34	(D)	61	103	324	405	(D)
Machinery.....	35	13,455	53	236	1,354	2,442	9,371
Office, computing, and accounting machines.....	357	(D)	0	(D)	315	531	7,323
Other machinery, except electrical.....	351-56,358-59	(D)	53	(D)	1,039	1,911	2,048
Electrical equipment.....	36	22,498	48	150	1,840	3,816	16,645
Radio and TV receiving equipment.....	365	(D)	(D)	4	32	102	0
Communication equipment.....	366	(D)	(D)	31	468	1,065	3,272
Electronic components.....	367	(D)	(D)	22	739	1,731	11,310
Other electrical equipment.....	361-64,369	(D)	(D)	93	601	918	2,063

See explanatory information and SOURCE at end of table.

Table A-5a. Total (company, Federal, and other) funds for industrial R&amp;D performance, by industry, size of company, and size of R&amp;D program: 1996

Page 2 of 3

Industry and size of company	SIC code	Total	Size of R&D program				
			Less than \$200,000	\$200,000 to \$999,999	\$ 1 million to \$9.9 million	\$ 10 million to \$99.9 million	\$100 million or more
[Dollars in millions]							
Distribution by industry:							
Transportation equipment.....	37	\$32,737	\$5	(D)	\$201	\$973	(D)
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	\$0	93	498	\$15,355
Other transportation equipment.....	373-75,379	(D)	(D)	(D)	(D)	171	(D)
Aircraft and missiles.....	372,376	16,224	0	(D)	(D)	305	15,847
Professional and scientific instruments.....	38	12,149	\$16	\$112	\$1,113	\$2,537	\$8,370
Scientific and mechanical measuring instruments.....	381-82	(D)	(D)	52	623	1,343	5,064
Optical, surgical, photographic, and other instruments.....	384-87	(D)	(D)	60	490	1,194	3,307
Other manufacturing industries 1/.....	27,31,39	(D)	421	898	1,183	352	(D)
Nonmanufacturing.....		32,803	441	1,607	7,191	9,276	14,289
Transportation and utilities.....	40-42,44-49	4,678	(D)	40	330	472	(D)
Communications.....	48	(D)	(D)	2	57	(D)	(D)
Telephone communications.....	481	(D)	0	0	(D)	190	(D)
Other communications.....	482-484,489	73	(D)	2	(D)	(D)	0
Electric, gas, and sanitary services.....	49	352	2	24	142	184	0
Other transportation and utilities.....	40-42,44-47	(D)	0	14	130	(D)	0
Trade.....	50-59	6,389	94	271	1,772	1,142	3,110
Finance, insurance, and real estate.....	60-65,67	(D)	(D)	43	277	461	(D)
Services.....	701,72,73,75-81, 83,84,87,89	19,022	119	601	4,448	7,004	6,849
Business services.....	73	10,641	81	333	2,281	3,523	4,423
Computer and data processing services.....	737	(D)	(D)	290	2,170	3,416	4,423
Other business services.....	731-736,738	(D)	(D)	43	111	107	0
Health services.....	80	(D)	12	23	54	(D)	(D)
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	715 (S)	(D)	(D)	45	(D)	(D)
Other health services.....	802-805,808-809	(D)	(D)	(D)	8	(D)	0

See explanatory information and SOURCE at end of table.

Table A-5a. Total (company, Federal, and other) funds for industrial R&amp;D performance, by industry, size of company, and size of R&amp;D program: 1996

Page 3 of 3

Industry and size of company	SIC code	Total	Size of R&D program				
			Less than \$200,000	\$200,000 to \$999,999	\$ 1 million to \$9.9 million	\$ 10 million to \$99.9 million	\$100 million or more
[Dollars in millions]							
Engineering and management services.....	87	\$7,318	(D)	\$218	\$2,057	(D)	\$1,692 (S)
Engineering, architectural, and surveying.....	871	1,660	(D)	90	711	\$682	(D)
Research, development, and testing.....	873	5,484	(D)	56	1,270	2,628	(D)
Other engineering and management services.....	872,874	173	(D)	72	75	(D)	0
Other services.....	701,72,75-79,81, 83,84,89	(D)	\$9	28	57	115	(D)
Other nonmanufacturing industries 1/.....	07-12,14,15, 161-162,17	(D)	(D)	651	364	197	\$0
Distribution by size of company:							
[Number of employees]							
Total.....		144,667	1,160	3,517	15,068	25,460	99,463
Fewer than 500.....		20,249	1,126	3,232	10,440	5,451	0
500 to 999.....		4,637	(D)	160	1,619	2,527	(D)
1,000 to 4,999.....		18,273	15	92	2,361	9,461	6,345
5,000 to 9,999.....		11,537	1	19	352	3,638	7,526
10,000 to 24,999.....		20,164	(D)	9	188	2,780	(D)
25,000 or more.....		69,808	0	4	109	1,603	68,092

1/ Beginning in 1996 manufacturing companies with fewer than 50 employees and nonmanufacturing companies with fewer than 15 employees were sampled separately without regard to industry classification to minimize year-to-year variation in survey estimates. Estimates for manufacturing companies in this group are combined with those for companies in "Other manufacturing industries." Estimates for nonmanufacturing companies in this group are combined with those for companies in "Other nonmanufacturing industries." As a result, statistics for "Other manufacturing industries" and for "Other nonmanufacturing industries" for 1996 are not comparable with statistics for prior years.

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

Table A-6a. Number of R&amp;D-performing companies, by industry, size of company, and size of R&amp;D program: 1996

Page 1 of 3

Industry and size of company	SIC code	Total	Size of R&D program				
			Less than \$200,000	\$200,000 to \$999,999	\$ 1 million to \$9.9 million	\$ 10 million to \$99.9 million	\$100 million or more
[Number of companies]							
All Industries.....		34,569	19,972	8,020	5,481	919	177
Distribution by industry:							
Manufacturing.....		19,090	11,191	4,329	2,856	576	138
Food, kindred, and tobacco products.....	20,21	645	375	133	109	26	2
Textiles and apparel.....	22,23	451	275	117	48	11	0
Lumber, wood products, and furniture.....	24,25	429	331	64	24	8	2
Paper and allied products.....	26	197	100	7	71	16	2
Chemicals and allied products.....	28	618	200	134	166	84	34
Industrial chemicals.....	281-82,286	169	0	50	72	34	12
Drugs and medicines.....	283	100	50	0	9	23	18
Other chemicals.....	284-85,287-89	349	150	84	84	27	4
Petroleum refining and extraction.....	13,29	124	0	100	9	9	6
Rubber products.....	30	558	222	190	123	19	3
Stone, clay, and glass products.....	32	248	189	21	27	10	1
Primary metals.....	33	231	102	66	49	12	2
Ferrous metals and products.....	331-32,3398-99	137	50	61	19	7	0
Nonferrous metals and products.....	333-36	94	52	5	29	5	2
Fabricated metal products.....	34	1,005	627	251	111	14	2
Machinery.....	35	1,875	765	558	446	84	22
Office, computing, and accounting machines.....	357	151	0	31	86	20	14
Other machinery, except electrical.....	351-56,358-59	1,724	765	527	360	64	8
Electrical equipment.....	36	1,497	495	312	510	152	28
Radio and TV receiving equipment.....	365	51	29	6	13	3	0
Communication equipment.....	366	290	54	66	117	43	9
Electronic components.....	367	588	234	68	209	62	15
Other electrical equipment.....	361-64,369	569	179	172	171	44	4

See explanatory information and SOURCE at end of table.

Table A-6a. Number of R&amp;D-performing companies, by industry, size of company, and size of R&amp;D program: 1996

Page 2 of 3

Industry and size of company	SIC code	Total	Size of R&D program				
			Less than \$200,000	\$200,000 to \$999,999	\$ 1 million to \$9.9 million	\$ 10 million to \$99.9 million	\$100 million or more
[Number of companies]							
Distribution by industry:							
Transportation equipment.....	37	346	150	52	95	30	19
Motor vehicles and motor vehicles equipment.....	371	179	100	0	54	19	6
Other transportation equipment.....	373-75,379	94	50	2	36	4	2
Aircraft and missiles.....	372,376	73	0	50	5	7	11
Professional and scientific instruments.....	38	877	172	228	376	86	14
Scientific and mechanical measuring instruments.....	381-82	468	77	109	224	51	7
Optical, surgical, photographic, and other instruments....	384-87	409	95	119	152	35	7
Other manufacturing industries 1/.....	27,31,39	9,990	7,189	2,093	693	14	1
Nonmanufacturing.....		15,479	8,781	3,692	2,625	343	39
Transportation and utilities.....	40-42,44-49	274	32	104	116	17	4
Communications.....	48	38	1	4	22	7	4
Telephone communications.....	481	11	0	0	1	6	4
Other communications.....	482-484,489	27	1	4	21	1	0
Electric, gas, and sanitary services.....	49	122	31	48	37	6	0
Other transportation and utilities.....	40-42,44-47	114	0	53	57	4	0
Trade.....	50-59	2,950	1,400	774	725	39	12
Finance, insurance, and real estate.....	60-65,67	308	102	109	83	11	3
Services.....	701,72,73,75-81, 83,84,87,89	4,896	1,834	1,355	1,418	270	20
Business services.....	73	2,750	1,029	772	810	126	13
Computer and data processing services.....	737	2,366	817	659	755	121	13
Other business services.....	731-736,738	384	211	113	55	5	0
Health services.....	80	351	261	68	18	2	2
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	317	232	67	14	1	2
Other health services.....	802-805,808-809	34	28	1	4	1	0

See explanatory information and SOURCE at end of table.

Table A-6a. Number of R&amp;D-performing companies, by industry, size of company, and size of R&amp;D program: 1996

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Industry and size of company	SIC code	Total	Size of R&D program				
			Less than \$200,000	\$200,000 to \$999,999	\$1 million to \$9.9 million	\$10 million to \$99.9 million	\$100 million or more
[Number of companies]							
Distribution by industry:							
Engineering and management services.....	87	1,413	244	451	575	138	4
Engineering, architectural, and surveying.....	871	593	146	203	221	23	1
Research, development, and testing.....	873	661	83	120	342	113	3
Other engineering and management services.....	872,874	159	16	129	12	2	0
Other services.....	701,72,75-79,81, 83,84,89	382	300	64	14	3	1
Other nonmanufacturing industries 1/.....	07-12,14,15, 161-162,17	7,051	5,413	1,349	282	6	0
Distribution by size of company: [Number of employees]							
Total.....		34,569	19,972	8,020	5,481	919	177
Fewer than 500.....		31,519	19,592	7,474	4,175	278	0
500 to 999.....		1,132	213	328	491	99	2
1,000 to 4,999.....		1,324	156	168	652	309	38
5,000 to 9,999.....		292	11	31	102	117	32
10,000 to 24,999.....		175	1	14	38	73	49
25,000 or more.....		127	0	6	23	42	56

1/ Beginning in 1996 manufacturing companies with fewer than 50 employees and nonmanufacturing companies with fewer than 15 employees were sampled separately without regard to industry classification to minimize year-to-year variation in survey estimates. Estimates for manufacturing companies in this group are combined with those for companies in "Other manufacturing industries." Estimates for nonmanufacturing companies in this group are combined with those for companies in "Other nonmanufacturing industries." As a result, statistics for "Other manufacturing industries" and for "Other nonmanufacturing industries" for 1996 are not comparable with statistics for prior years.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

Table A-7a. Company and other (except Federal) funds for industrial R&amp;D performance, by industry and size of company: 1986-96

Page 1 of 3

Industry and size of company	SIC code	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
		[Dollars in millions]										
All Industries.....		\$59,932	\$61,403	\$66,672	\$73,501	\$81,602	\$90,580	\$94,388	\$94,591	\$97,131	\$108,652	\$121,015
Distribution by industry:												
Manufacturing.....		55,192	56,259	59,415	63,199	65,251	67,639	71,025	69,901	73,375	81,236	91,845
Food, kindred, and tobacco products.....	20,21	1,280	1,204	1,173	1,244	1,248	1,277	1,386	1,345	1,476	1,566	1,564
Textiles and apparel.....	22,23	246	243	215	(S)	260	236	261	286	316	381	414
Lumber, wood products, and furniture.....	24,25	144	137	165	192	216	200	234	196	201	229	634
Paper and allied products.....	26	538	604	752	879	1,059	1,174	1,182	1,191	1,263	1,404	1,534
Chemicals and allied products.....	28	8,664	9,445	10,828	11,943	13,168	14,439	15,091	16,658	16,559	17,337	17,520
Industrial chemicals.....	281-82,286	3,374	3,531	3,939	4,340	4,902	5,225	4,911	5,165	4,780	5,139	5,246
Drugs and medicines.....	283	3,657	4,095	4,900	5,512	5,917	6,947	7,934	9,132	9,625	10,202	9,769
Other chemicals.....	284-85,287-89	1,633	1,819	1,989	2,091	2,349	2,267	2,246	2,361	2,154	1,996	2,505
Petroleum refining and extraction.....	13,29	1,971	1,883	1,975	2,162	2,289	2,487	2,268	2,138	1,939	1,754	1,630
Rubber products.....	30	655	596	718	867	1,056	(D)	1,256	1,059	1,432	1,210	1,269
Stone, clay, and glass products.....	32	941	985	697	615	538	455	479	529	553	441	463
Primary metals.....	33	786	711	620	666	717	706	514	646	672	580	637
Ferrous metals and products.....	331-32,3398-99	336	249	252	244	231	225	221	272	241	217	214
Nonferrous metals and products.....	333-36	450	462	368	422	486	481	293	374	431	363	422
Fabricated metal products.....	34	800	633	718	726	736	748	723	936	868	937	1,322
Machinery.....	35	10,701	10,577	11,929	13,342	13,575	13,720	13,903	8,295	8,011	9,676	13,338
Office, computing, and accounting machines.....	357	8,380	8,193	9,347	10,725	10,988	10,419	10,614	4,917	4,078	4,699	8,132
Other machinery, except electrical.....	351-56,358-59	2,321	2,384	2,582	2,618	2,587	3,301	3,289	3,378	3,933	4,976	5,206
Electrical equipment.....	36	9,767	10,449	9,975	9,575	9,267	8,865	9,516	11,682	13,537	17,060	20,356
Radio and TV receiving equipment.....	365	133	139	149	96	114	(D)	93	87	64	114	140
Communication equipment.....	366	5,117	5,455	4,798	4,159	3,584	(S)	3,381	3,954	4,939	3,845	4,359
Electronic components.....	367	3,357	3,630	3,684	3,655	3,496	3,177	3,320	5,105	5,870	9,628	12,497
Other electrical equipment.....	361-64,369	1,160	1,225	1,345	1,664	2,073	(D)	2,722	2,537	2,664	3,473	3,360
Transportation equipment.....	37	13,567	13,462	13,910	14,596	14,264	14,858	16,292	16,640	17,695	19,311	20,535
Motor vehicles and motor vehicles equipment.....	371	7,171	7,167	7,783	8,756	8,594	9,063	9,132	10,659	11,950	13,590	14,528
Other transportation equipment.....	373-75,379	330	356	361	337	283	262	289	297	279	232	298
Aircraft and missiles.....	372,376	6,066	5,939	5,766	5,503	5,387	5,533	6,871	5,684	5,466	5,489	5,710

See explanatory information and SOURCE at end of table.

Table A-7a. Company and other (except Federal) funds for industrial R&amp;D performance, by industry and size of company: 1986-96

Page 2 of 3

Industry and size of company	SIC code	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
[Dollars in millions]												
Distribution by industry:												
Professional and scientific instruments.....	38	\$4,752	\$4,950	\$5,339	\$5,729	\$6,318	\$6,840	\$7,321	\$7,542	\$8,058	\$8,516	\$8,207
Scientific and mechanical measuring instruments.....	381-82	1,521	1,598	1,863	2,205	2,696	3,017	3,013	3,196	3,687	3,787	3,283
Optical, surgical, photographic, and other instruments.....	384-87	3,231	3,352	3,476	3,524	3,621	3,823	4,308	4,346	4,371	4,729	4,924
Other manufacturing industries 1/.....	27,31,39	380	380	401	438	541	(D)	599	758	796	835	2,423
Nonmanufacturing 2/.....		4,740	5,144	7,257	10,302	16,351	22,941	23,363	24,690	23,756	27,415	29,170
Transportation and utilities.....	40-42,44-49	NA	NA	NA	NA	NA	NA	NA	NA	NA	5,183	4,492
Communications.....	48	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,756	3,970
Telephone communications.....	481	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,697	3,897
Other communications.....	482-484,489	NA	NA	NA	NA	NA	NA	NA	NA	NA	59	73
Electric, gas, and sanitary services.....	49	NA	NA	NA	NA	NA	NA	NA	NA	NA	347	311
Other transportation and utilities.....	40-42,44-47	NA	NA	NA	NA	NA	NA	NA	NA	NA	80	211
Trade.....	50-59	NA	NA	NA	NA	NA	NA	NA	NA	NA	7,514	6,338
Finance, insurance, and real estate.....	60-65,67	NA	NA	NA	NA	NA	NA	NA	NA	NA	710	1,280
Services.....	701,72,73, 75-81,83, 84,87,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	13,606	15,904
Business services.....	73	NA	NA	NA	NA	NA	NA	NA	NA	NA	8,681	10,280
Computer and data processing services.....	737	NA	NA	NA	NA	NA	NA	NA	NA	NA	8,545	10,025
Other business services.....	731-736,738	NA	NA	NA	NA	NA	NA	NA	NA	NA	136	255
Health services.....	80	NA	NA	NA	NA	NA	NA	NA	NA	NA	753	735 (S)
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	NA	NA	NA	NA	NA	NA	NA	NA	NA	737	713 (S)
Other health services.....	802-805, 808-809	NA	NA	NA	NA	NA	NA	NA	NA	NA	16 (S)	23

See explanatory information and SOURCE at end of table.

Table A-7a. Company and other (except Federal) funds for industrial R&amp;D performance, by industry and size of company: 1986-96

Page 3 of 3

Industry and size of company	SIC code	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
[Dollars in millions]												
Engineering and management services.....	87	NA	NA	NA	NA	NA	NA	NA	NA	\$4,011	\$4,572	
Engineering, architectural, and surveying.....	871	NA	NA	NA	NA	NA	NA	NA	NA	1,050	667	
Research, development, and testing.....	873	NA	NA	NA	NA	NA	NA	NA	NA	2,829	3,776	
Other engineering and management services.....	872,874	NA	NA	NA	NA	NA	NA	NA	NA	132	129	
Other services.....	701,72,75-79, 81,83,84,89	NA	NA	NA	NA	NA	NA	NA	NA	160	317	
Other nonmanufacturing industries 1/.....	07-12,14,15, 161-162,17	NA	NA	NA	NA	NA	NA	NA	NA	402	1,156	
Distribution by size of company: [Number of employees]												
Total.....		\$59,932	\$61,403	\$66,672	\$73,501	\$81,602	\$90,580	\$94,388	\$94,591	\$97,131	\$108,652	\$121,015
Fewer than 500.....		6,203	6,200	(S)	(S)	(S)	11,285	11,532	13,006	12,802	14,684	17,948
500 to 999.....		1,765	1,610	1,748	1,934	2,144	7,819	7,807	3,048	3,426	4,468	4,418
1,000 to 4,999.....		6,243	6,281	6,820	7,546	8,363	9,403	10,865	12,219	13,533	16,162	17,761
5,000 to 9,999.....		3,455	3,753	4,075	4,509	4,997	7,233	7,495	8,371	8,087	9,289	11,068
10,000 to 24,999.....		8,489	9,681	10,512	11,631	12,890	12,397	12,328	12,606	13,625	15,125	19,133
25,000 or more.....		33,777	33,878	36,785	40,703	45,106	42,443	44,361	45,340	45,658	48,924	50,686

1/ Beginning in 1996 manufacturing companies with fewer than 50 employees and nonmanufacturing companies with fewer than 15 employees were sampled separately without regard to industry classification to minimize year-to-year variation in survey estimates. Estimates for manufacturing companies in this group are combined with those for companies in "Other manufacturing industries." Estimates for nonmanufacturing companies in this group are combined with those for companies in "Other nonmanufacturing industries." As a result, statistics for "Other manufacturing industries" and for "Other nonmanufacturing industries" for 1996 are not directly comparable with statistics for prior years.

2/ Until 1995, data were not broken down below this level of detail for most nonmanufacturing industries.

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.

NA = Not available.

**NOTES:** Company-funded R&D includes funds for industrial R&D performed within company facilities from all sources except the Federal Government. The funds predominantly are the company's own, but also include funds from outside organizations such as other companies, research institutions, universities and colleges, nonprofit organizations, and state governments. Company-financed R&D not performed within the company is excluded.

As a result of a new sample design, statistics for 1988-91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

Table A-8a. Company and other (except Federal) funds for industrial R&amp;D performance, by industry and size of company: 1996

Page 1 of 3

Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
[Dollars in millions]								
All Industries.....		\$121,015	\$17,948	\$4,418	\$17,761	\$11,068	\$19,133	\$50,686
Distribution by industry:								
Manufacturing.....		91,845	7,421	2,807	13,367	8,633	15,716	43,901
Food, kindred, and tobacco products.....	20,21	1,564	58	53	217	338	246	651
Textiles and apparel.....	22,23	414	60	39	173	26	(D)	(D)
Lumber, wood products, and furniture.....	24,25	634	43	21	38	68	(D)	(D)
Paper and allied products.....	26	1,534	16	20	230	70	354	844 (S)
Chemicals and allied products.....	28	17,520	501	288	3,376	2,485	6,314	4,556
Industrial chemicals.....	281-82,286	5,246	192	154	1,197	601	(D)	(D)
Drugs and medicines.....	283	9,769	123	76	1,660	1,564	3,614	2,732
Other chemicals.....	284-85,287-89	2,505	185	58	520	320	(D)	(D)
Petroleum refining and extraction.....	13,29	1,630	(D)	(D)	59	(D)	673	839
Rubber products.....	30	1,269	153	121	348	(D)	206	(D)
Stone, clay, and glass products.....	32	463	20	28	84	96	235	0
Primary metals.....	33	637	50	(D)	129	101	153	(D)
Ferrous metals and products.....	331-32,3398-99	214	19	(D)	64	61	(D)	(D)
Nonferrous metals and products.....	333-36	422	31	(D)	65	39	(D)	(D)
Fabricated metal products.....	34	1,322	186	101	175	(D)	418	(D)
Machinery.....	35	13,338	(D)	575	2,017	2,048	3,662	(D)
Office, computing, and accounting machines.....	357	8,132	(D)	211 (S)	718	1,145	2,324	(D)
Other machinery, except electrical.....	351-56,358-59	5,206	(D)	365	1,299	903	1,338	(D)
Electrical equipment.....	36	20,356	2,244	733	3,964	1,493	2,025	9,896
Radio and TV receiving equipment.....	365	140	23	11	(D)	(D)	0	0
Communication equipment.....	366	4,359	743	208	1,238	(D)	(D)	(D)
Electronic components.....	367	12,497	821	330	2,161	863	632	7,691
Other electrical equipment.....	361-64,369	3,360	656	185	(D)	136	(D)	(D)

See explanatory information and SOURCE at end of table.

Table A-8a. Company and other (except Federal) funds for industrial R&amp;D performance, by industry and size of company: 1996

Page 2 of 3

Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
[Dollars in millions]								
Distribution by industry:								
Transportation equipment.....	37	\$20,535	\$51	\$101	\$382	\$521	\$424	\$19,056
Motor vehicles and motor vehicles equipment.....	371	14,528	(D)	(D)	143	361	325	13,618
Other transportation equipment.....	373-75,379	298	(D)	0	114	(D)	(D)	175
Aircraft and missiles.....	372,376	5,710	(D)	(D)	125	(D)	(D)	5,263
Professional and scientific instruments.....	38	8,207	1,046	663	2,003	(D)	(D)	3,173
Scientific and mechanical measuring instruments.....	381-82	3,283	649	494	929	(D)	(D)	(D)
Optical, surgical, photographic, and other instruments....	384-87	4,924	397	170	1,074	699	(D)	(D)
Other manufacturing industries 1/.....	27,31,39	2,423	1,790	37	171	242	138	47
Nonmanufacturing.....		29,170	10,527	1,612	4,395	2,435	3,417	6,785
Transportation and utilities.....	40-42,44-49	4,492	190	(D)	121	(D)	105	3,980
Communications.....	48	3,970	39	(D)	(D)	(D)	0	(D)
Telephone communications.....	481	3,897	0	0	0	(D)	0	(D)
Other communications.....	482-484,489	73	39	(D)	(D)	0	0	0
Electric, gas, and sanitary services.....	49	311	24	(D)	90	68	(D)	(D)
Other transportation and utilities.....	40-42,44-47	211	127	0	(D)	(D)	(D)	74
Trade.....	50-59	6,338	2,146	277	1,107	572	(D)	(D)
Finance, insurance, and real estate.....	60-65,67	1,280	77	7	289	211	(D)	(D)
Services.....	701,72,73,75-81, 83,84,87,89	15,904	7,226	1,298	2,760	1,528	2,860	232
Business services.....	73	10,280	3,126	887	2,611	1,475	2,138	44
Computer and data processing services.....	737	10,025	3,032	862	2,555	(D)	(D)	(D)
Other business services.....	731-736,738	255	93	24	56	(D)	(D)	(D)

See explanatory information and SOURCE at end of table.

Table A-8a. Company and other (except Federal) funds for industrial R&amp;D performance, by industry and size of company: 1996

Page 3 of 3

Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
[Dollars in millions]								
Distribution by industry:								
Health services.....	80	\$735 (S)	\$75	(D)	\$32	(D)	(D)	\$0
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	713 (S)	72	(D)	(D)	\$0	(D)	0
Other health services.....	802-805,808-809	23	4	(D)	(D)	(D)	\$0	0
Engineering and management services.....	87	4,572	3,982	(D)	60	(D)	28	(D)
Engineering, architectural, and surveying.....	871	667	541	\$33	38	(D)	(D)	0
Research, development, and testing.....	873	3,776	3,355	(D)	(D)	0	(D)	(D)
Other engineering and management services.....	872,874	129	85	20	(D)	0	(D)	0
Other services.....	701,72,75-79,81, 83,84,89	317	43	8	56	(D)	(D)	(D)
Other nonmanufacturing industries 1/.....	07-12,14,15, 161-162,17	1,156	888	17	118	40	(D)	(D)

1/ Beginning in 1996 manufacturing companies with fewer than 50 employees and nonmanufacturing companies with fewer than 15 employees were sampled separately without regard to industry classification to minimize year-to-year variation in survey estimates. Estimates for manufacturing companies in this group are combined with those for companies in "Other manufacturing industries." Estimates for nonmanufacturing companies in this group are combined with those for companies in "Other nonmanufacturing industries." As a result, statistics for "Other manufacturing industries" and for "Other nonmanufacturing industries" for 1996 are not comparable with statistics for prior years.

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

**Table A-9a. Company-financed R&D contracted to outside organizations by R&D-performing companies, by industry and size of company: 1991, 1993, 1994, 1995, and 1996**

Page 1 of 3

Industry and size of company	SIC code	1991	1993	1994	1995	1996
		[Dollars in millions]				
All Industries.....		\$3,319	\$3,462	\$3,618	\$5,177	\$5,833
Distribution by industry						
Manufacturing.....		2,577	2,339	2,450	3,812	4,293
Food, kindred, and tobacco products.....	20,21	44	43	43	41	50
Textiles and apparel.....	22,23	(D)	2	4	1	3
Lumber, wood products, and furniture.....	24,25	(D)	8	8	7	(D)
Paper and allied products.....	26	12	5	4	14	4
Chemicals and allied products.....	28	1,087	1,117	1,239	2,386	2,537
Industrial chemicals.....	281-82,286	95	43	38	259	229
Drugs and medicines.....	283	771	942	1,055	1,751	2,098
Other chemicals.....	284-85,287-89	221	132	146	376	210
Petroleum refining and extraction.....	13,29	35	56	52	32	24
Rubber products.....	30	18	65	22	32	36
Stone, clay, and glass products.....	32	(D)	2	6	2	9
Primary metals.....	33	24	12	15	13	16
Ferrous metals and products.....	331-32,3398-99	4	8	10	5	4
Nonferrous metals and products.....	333-36	20	4	5	8	11
Fabricated metal products.....	34	3	21	21	10	28
Machinery.....	35	256	125	200	201	330
Office, computing, and accounting machines.....	357	229	52	113	84	220
Other machinery, except electrical.....	351-56,358-59	27	73	87	117	110
Electrical equipment.....	36	114	143	116	194	178
Radio and TV receiving equipment.....	365	0	(D)	1	2	(D)
Communication equipment.....	366	63	20	38	40	(D)
Electronic components.....	367	38	24	24	75	88
Other electrical equipment.....	361-64,369	13	(D)	54	77	54
Transportation equipment.....	37	687	(D)	591	(D)	(D)
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	(D)	(D)	(D)
Other transportation equipment.....	373-75,379	(S)	(D)	(D)	5	(D)
Aircraft and missiles.....	372,376	(D)	52	83	72	(D)

See explanatory information and SOURCE at end of table.

**Table A-9a. Company-financed R&D contracted to outside organizations by R&D-performing companies, by industry and size of company: 1991, 1993, 1994, 1995, and 1996**

Page 2 of 3

Industry and size of company	SIC code	1991	1993	1994	1995	1996		
Distribution by industry			[Dollars in millions]					
Professional and scientific instruments.....	38	(D)	\$189	\$57	\$114	\$55		
Scientific and mechanical measuring instruments.....	381-82	\$4	25	16	45	8		
Optical, surgical, photographic, and other instruments..	384-87	(D)	163	40	68	47		
Other manufacturing industries 1/.....	27,31,39	2	(D)	72	(D)	26		
Nonmanufacturing 2/.....		742	1,123	1,168	1,365	1,540		
Transportation and Utilities.....	40-42,44-49	NA	NA	NA	509	466		
Communications.....	48	NA	NA	NA	264	230		
Telephone communications.....	481	NA	NA	NA	(D)	(D)		
Other communications.....	482-484,489	NA	NA	NA	(D)	(D)		
Electric, gas, and sanitary services.....	49	NA	NA	NA	219	229		
Other transportation and utilities.....	40-42,44-47	NA	NA	NA	27	6		
Trade.....	50-59	NA	NA	NA	346	217		
Finance, insurance, and real estate.....	60-65,67	NA	NA	NA	92	153 (S)		
Services.....	701,72,73,75-81, 83,84,87,89	NA	NA	NA	416	694		
Business services.....	73	NA	NA	NA	151	226		
Computer and data processing services.....	737	NA	NA	NA	139	224		
Other business services.....	731-736,738	NA	NA	NA	12	2		
Health services.....	80	NA	NA	NA	38	66 (S)		
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	NA	NA	NA	(D)	(D)		
Other health services.....	802-805,808-809	NA	NA	NA	(D)	(D)		
Engineering and management services.....	87	NA	NA	NA	200	396		
Engineering, architectural, and surveying.....	871	NA	NA	NA	13	22		
Research, development, and testing.....	873	NA	NA	NA	187	373		
Other engineering and management services.....	872,874	NA	NA	NA	0	0		

See explanatory information and SOURCE at end of table.

**Table A-9a. Company-financed R&D contracted to outside organizations by R&D-performing companies, by industry and size of company: 1991, 1993, 1994, 1995, and 1996**

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Industry and size of company	SIC code	1991	1993	1994	1995	1996
[Dollars in millions]						
Distribution by industry						
Other services.....	701,72,75-79,81, 83,84,89	NA	NA	NA	27	6
Other nonmanufacturing industries 1/.....	07-12,14,15, 161-162,17	NA	NA	NA	1	10
Distribution by size of company: [Number of employees]						
Total.....		\$3,319	\$3,462	\$3,618	\$5,177	\$5,833
Fewer than 500.....		(S)	751	724	674	699
500 to 999.....		35	107	126	174	161 (S)
1,000 to 4,999.....		275	310	397	632	632
5,000 to 9,999.....		218	327	408	393	761
10,000 to 24,999.....		881	468	391	786	1,458
25,000 or more.....		1,762	1,497	1,574	2,518	2,121

1/ Beginning in 1996 manufacturing companies with fewer than 50 employees and nonmanufacturing companies with fewer than 15 employees were sampled separately without regard to industry classification to minimize year-to-year variation in survey estimates. Estimates for manufacturing companies in this group are combined with those for companies in "Other manufacturing industries." Estimates for nonmanufacturing companies in this group are combined with those for companies in "Other nonmanufacturing industries." As a result, statistics for Other manufacturing industries and for Other nonmanufacturing industries for 1996 are not comparable with statistics for prior years.

2/ Until 1995, data were not broken down below this level of detail for most nonmanufacturing industries.

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.

NA = Not available.

**NOTE:** As a result of a new sample design, statistics for 1988-91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

**Table A-10a. Number of R&D-performing companies contracting R&D performance to outside organizations and total number of R&D-performing companies, by industry and size of company: 1996**

Page 1 of 3

Industry	SIC code	Total		Size of company											
				Fewer than 500 employees		500 to 999 employees		1,000 to 4,999 employees		5,000 to 9,999 employees		10,000 to 24,999 employees		25,000 or more employees	
		Total	Outside	Total	Outside	Total	Outside	Total	Outside	Total	Outside	Total	Outside	Total	Outside
All Industries.....		34,569	3,259	31,519	2,771	1,132	145	1,324	191	292	69	175	50	127	33
Manufacturing.....		19,090	1,906	16,846	1,573	862	122	973	123	202	39	131	30	76	19
Food, kindred, and tobacco products.....	20,21	645	25	449	2	63	8	94	4	16	5	11	3	12	2
Textiles and apparel.....	22,23	451	9	317	2	65	3	51	2	9	2	8	0	1	0
Lumber, wood products, and furniture.....	24,25	429	14	356	4	23	4	33	3	11	1	4	1	2	0
Paper and allied products.....	26	197	5	107	0	11	0	57	2	6	1	10	0	6	2
Chemicals and allied products.....	28	618	132	430	87	52	9	89	18	22	8	17	6	8	4
Industrial chemicals.....	281-82,286	169	38	94	28	25	4	31	3	8	1	8	2	3	1
Drugs and medicines.....	283	100	22	58	3	6	1	22	8	5	4	6	4	3	2
Other chemicals.....	284-85,287-89	349	72	278	56	21	5	37	7	9	3	3	0	2	1
Petroleum refining and extraction.....	13,29	124	6	104	0	1	0	5	1	1	0	9	3	4	2
Rubber products.....	30	558	77	389	53	83	14	73	6	7	1	4	2	2	1
Stone, clay, and glass products.....	32	248	15	200	1	15	7	24	7	5	1	4	0	0	0
Primary metals.....	33	231	68	163	56	16	1	31	4	13	4	5	2	3	1
Ferrous metals and products.....	331-32,3398-99	137	10	102	2	3	0	21	2	9	4	2	1	1	1
Nonferrous metals and products.....	333-36	94	58	61	54	13	1	10	2	4	0	3	1	2	0
Fabricated metal products.....	34	1,005	147	823	123	91	11	68	8	10	1	11	4	1	0
Machinery.....	35	1,875	181	1,534	140	109	11	185	18	26	6	18	4	3	2
Office, computing, and accounting machines.....	357	151	7	114	2	12	0	12	1	7	2	5	1	1	1
Other machinery, except electrical.....	351-56,358-59	1,724	174	1,420	138	97	11	173	17	19	4	13	3	2	1
Electrical equipment.....	36	1,497	280	1,178	207	155	43	126	22	18	6	12	1	9	1
Radio and TV receiving equipment.....	365	51	3	42	2	5	1	3	0	1	0	0	0	0	0
Communication equipment.....	366	290	45	232	37	27	3	23	4	4	1	1	0	2	0
Electronic components.....	367	588	111	466	75	61	27	46	7	7	1	4	1	4	0
Other electrical equipment.....	361-64,369	569	121	437	93	62	12	54	11	6	4	7	0	3	1
Transportation equipment.....	37	346	12	204	0	52	0	25	5	40	2	10	2	16	3
Motor vehicles and motor vehicles equipment.....	371	179	6	100	0	51	0	9	2	8	1	7	2	4	1
Other transportation equipment.....	373-75,379	94	2	52	0	0	0	10	2	28	0	2	0	3	0
Aircraft and missiles.....	372,376	73	4	52	0	1	0	6	1	4	1	1	0	9	2

See explanatory information and SOURCE at end of table.

**Table A-10a. Number of R&D-performing companies contracting R&D performance to outside organizations and total number of R&D-performing companies, by industry and size of company: 1996**

Page 2 of 3

Industry	SIC code	Total		Size of company											
				Fewer than 500 employees		500 to 999 employees		1,000 to 4,999 employees		5,000 to 9,999 employees		10,000 to 24,999 employees		25,000 or more employees	
		Total	Outside	Total	Outside	Total	Outside	Total	Outside	Total	Outside	Total	Outside	Total	Outside
Professional and scientific instruments.....	38	877	179	727	154	61	8	72	16	10	0	2	0	5	0
Scientific and mechanical measuring instruments....	381-82	468	95	395	89	39	2	27	4	3	0	1	0	3	0
Optical, surgical, photographic, and other instruments.....	384-87	409	84	332	65	22	6	45	12	7	0	1	0	2	0
Other manufacturing industries 1/.....	27,31,39	9,990	758	9,865	744	65	2	41	8	9	1	6	2	4	1
Nonmanufacturing.....		15,479	1,353	14,674	1,199	270	23	351	67	90	30	44	20	51	14
Transportation and utilities.....	40-42,44-49	274	77	167	11	4	1	53	36	20	12	13	8	18	9
Communications.....	48	38	14	22	9	2	0	3	0	1	0	0	0	10	5
Telephone communications.....	481	11	5	0	0	0	0	0	0	1	0	0	0	10	5
Other communications.....	482-484,489	27	9	22	9	2	0	3	0	0	0	0	0	0	0
Electric, gas, and sanitary services.....	49	122	58	43	1	2	1	45	35	18	11	11	6	3	3
Other transportation and utilities.....	40-42,44-47	114	5	102	0	0	0	4	1	1	1	1	2	2	1
Trade.....	50-59	2,950	376	2,695	359	119	2	91	6	31	7	5	2	9	1
Finance, insurance, and real estate.....	60-65,67	308	18	210	1	3	0	73	8	10	4	2	2	10	3
Services.....	701,72,73, 75-81,83, 84,87,89	4,896	515	4,601	468	124	15	111	15	23	6	24	9	13	1
Business services.....	73	2,750	323	2,564	294	90	12	63	10	19	5	8	0	7	1
Computer and data processing services.....	737	2,366	316	2,217	293	81	11	52	9	8	2	6	0	2	1
Other business services.....	731-736,738	384	6	347	1	8	1	11	1	11	3	2	0	5	0
Health services.....	80	351	12	337	5	4	0	6	4	1	1	3	2	0	0
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	317	9	307	4	3	0	4	3	0	0	3	2	0	0
Other health services.....	802-805, 808-809	34	3	30	1	1	0	2	1	1	1	0	0	0	0
Engineering and management services.....	87	1,413	168	1,342	164	27	3	33	0	1	0	5	1	5	0
Engineering, architectural, and surveying.....	871	593	29	557	26	11	2	21	0	1	0	3	1	0	0
Research, development, and testing.....	873	661	140	639	139	12	1	4	0	0	0	1	0	5	0
Other engineering and management services.....	872,874	159	0	145	0	4	0	8	0	0	0	1	0	0	0

See explanatory information and SOURCE at end of table.

**Table A-10a. Number of R&D-performing companies contracting R&D performance to outside organizations and total number of R&D-performing companies, by industry and size of company: 1996**

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Industry	SIC code	Total		Size of company									
				Fewer than 500 employees		500 to 999 employees		1,000 to 4,999 employees		5,000 to 9,999 employees		10,000 to 24,999 employees	
		Total	Outside	Total	Outside	Total	Outside	Total	Outside	Total	Outside	Total	Outside
Other services.....	701,72,75-79, 81,83,84,89	382	12	359	5	3	0	9	1	2	0	8	6
Other nonmanufacturing industries 1/.....	07-12,14,15, 161-162,17	7,051	368	7,000	359	19	5	23	2	6	1	1	0

1/ Beginning in 1996 manufacturing companies with fewer than 50 employees and nonmanufacturing companies with fewer than 15 employees were sampled separately without regard to industry classification to minimize year-to-year variation in survey estimates. Estimates for manufacturing companies in this group are combined with those for companies in "Other manufacturing industries." Estimates for nonmanufacturing companies in this group are combined with those for companies in "Other nonmanufacturing industries." As a result, statistics for Other manufacturing industries and for Other nonmanufacturing industries for 1996 are not comparable with statistics for prior years.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

**Table A-11a. Company-financed R&D performed outside the United States by U.S. R&D-performing domestic companies and their foreign subsidiaries, by selected industry: 1986–96**

Page 1 of 1

Industry	SIC code	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
[Dollars in millions]												
Total.....		\$4,624	\$5,226	\$6,208	\$6,706	\$7,952	\$9,147	\$10,063	\$9,565	\$9,395	\$13,052	\$14,050
Food, kindred, and tobacco products.....	20,21	69	37	27	42	41	66	88	112	117	142	155
Chemicals and allied products.....	28	1,071	1,243	1,548	1,532	2,007	2,401	2,676	2,833	2,456	4,194	3,801
Industrial and other chemicals.....	281–82,284–89	579	625	855	609	720	1,009	1,045	1,318	917	1,632	1,720
Drugs and medicines.....	283	492	618	693	923	1,287	1,392	1,631	1,516	1,539	2,562	2,082
Petroleum refining and extraction.....	13,29	40	47	59	47	76	107	119	104	111	76	78
Stone, clay, and glass products.....	32	(D)	(D)	(D)	(D)	59	38	41	38	27	31	32
Primary metals.....	33	(D)	18	23	24	26	20	18	12	15	26	29
Fabricated metal products.....	34	26	40	(D)	(D)	95	86	109	119	125	111	133
Machinery.....	35	951	1,233	1,326	1,432	1,451	1,476	1,439	340	308	501	1,404
Electrical equipment.....	36	(S)	432	591	573	770	651	568	525	495	872	959
Radio and TV receiving equipment....	365	(D)	0	(D)	(D)	(D)	2	(D)	(D)	3	(D)	(D)
Communication equipment.....	366	(D)	188	290	199	174	151	(D)	(D)	110	(D)	(D)
Electronic components.....	367	150	204	246	160	185	164	168	322	276	437	470
Other electrical equipment.....	361–64,369	25	39	(D)	(D)	(D)	334	217	113	107	291	260
Transportation equipment.....	37	(D)	(D)	1,750	1,916	2,055	2,402	(D)	(D)	(D)	(D)	(D)
Motor vehicles and other transportation equipment.....	371,373–75,379	(D)	(D)	1,477	1,501	1,901	2,166	(D)	(D)	(D)	(D)	(D)
Aircraft and missiles.....	372,376	182	237	273	415	154	236	493	(D)	251	284	(D)
Professional and scientific instruments...	38	212	317	404	474	611	656	685	751	900	988	960
Other manufacturing industries 1/.....	22–27,30–31,39	141	138	178	269	344	467	524	(D)	572	(D)	(D)
Nonmanufacturing industries 1/ 2/.....	07–10,12–17,40–42, 44–49,50–59,60–65, 67,701,73,75–76,78–79, 80–81,83–84,87,89	27	64	146	256	415	778	835	1,770	1,500	2,206	2,510

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1/ Beginning in 1996 manufacturing companies with fewer than 50 employees and nonmanufacturing companies with fewer than 15 employees were sampled separately without regard to industry classification to minimize year-to-year variation in survey estimates. Estimates for manufacturing companies in this group are combined with those for companies in "Other manufacturing industries." Estimates for nonmanufacturing companies in this group are combined with those for companies in "Other nonmanufacturing industries." As a result, statistics for "Other manufacturing industries" and for "Other nonmanufacturing industries" for 1996 are not comparable with statistics for prior years.

2/ Nonmanufacturing industries for 1990 and prior years included the following SICs only: 10–11, 14–17, 40–42, 44–51, 53–54, 56, 60, 62–63, 72–73, 78, 806–07, and 87.

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

**NOTES:** Data are reported in current U.S. dollars.

As a result of a new sample design, statistics for 1988–91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

Table A-12a. Federal funds for industrial R&amp;D performance, by industry and size of company: 1986-96

Page 1 of 3

Industry and size of company	SIC code	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
[Dollars in millions]												
All Industries.....		\$27,891	\$30,752	\$30,343	\$28,554	\$28,125	\$26,372	\$24,722	\$22,809	\$22,463	\$23,451	\$23,653
Distribution by industry:												
Manufacturing.....		25,185	28,052	27,088	24,826	23,683	20,867	19,152	16,669	17,373	18,831	20,020
Food, kindred, and tobacco products.....	20,21	(D)	2	(D)	(D)	(D)	0	0	0	0	0	0
Textiles and apparel.....	22,23	(D)	(D)	(D)	(D)	(D)	(S)	(D)	(D)	(D)	(D)	(D)
Lumber, wood products, and furniture.....	24,25	0	0	(D)	0	0	(D)	(D)	(D)	(D)	(D)	(D)
Paper and allied products.....	26	(D)	(D)	(D)	0	0	(D)	(D)	(D)	(D)	(D)	(D)
Chemicals and allied products.....	28	179	190	238	126	123	209	(S)	(D)	(D)	210 (S)	(D)
Industrial chemicals.....	281-82,286	178	185	232	111	109	165	(S)	(D)	(D)	(D)	(D)
Drugs and medicines.....	283	1	(D)	6	(D)	(D)	(D)	(S)	15	8	14	3
Other chemicals.....	284-85,287-89	0	(D)	0	(D)	(D)	(D)	(S)	(D)	(D)	(D)	0
Petroleum refining and extraction.....	13,29	(D)	14	22	(S)	(S)	11	9	14	10	6	24
Rubber products.....	30	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stone, clay, and glass products.....	32	9	10	(D)	(D)	(D)	(D)	(D)	9	38	6	5
Primary metals.....	33	(D)	19	17	22	(D)	8	(S)	23	17	13	(D)
Ferrous metals and products.....	331-32,3398-99	(D)	(D)	1	(D)	(D)	1	(D)	17	(D)	(D)	(D)
Nonferrous metals and products.....	333-36	8	(D)	16	(D)	(D)	7	(D)	6	(D)	(D)	(D)
Fabricated metal products.....	34	95	150	163	178	203	226	294	222	243	86	(D)
Machinery.....	35	(D)	(D)	(D)	(D)	871	1,055	1,035	86	99	(D)	117
Office, computing, and accounting machines.....	357	(D)	(D)	(D)	(D)	(D)	(D)	(D)	33	28	(D)	(D)
Other machinery, except electrical.....	351-56,358-59	75	44	101	112	(D)	(D)	(D)	53	71	64	(D)
Electrical equipment.....	36	5,213	5,399	4,153	3,743	4,133	4,550	3,844	1,667	1,801	1,690	2,143
Radio and TV receiving equipment.....	365	0	0	0	0	0	0	(D)	(D)	(D)	(D)	(D)
Communication equipment.....	366	4,552	4,729	3,630	2,911	2,344	(D)	(D)	(D)	(D)	(D)	(D)
Electronic components.....	367	(D)	656	449	369	418	(D)	247	206	162	(D)	(D)
Other electrical equipment.....	361-64,369	(D)	14	74	463	1,371	(D)	(D)	(D)	(D)	(D)	(D)
Transportation equipment.....	37	17,708	20,784	20,865	19,262	17,097	12,570	11,202	10,617	10,392	13,130	12,202
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other transportation equipment.....	373-75,379	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Aircraft and missiles.....	372,376	14,984	18,519	18,402	16,828	15,248	11,096	(S)	9,372	8,794	11,462	10,515

See explanatory information and SOURCE at end of table.

Table A-12a. Federal funds for industrial R&amp;D performance, by industry and size of company: 1986-96

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Industry and size of company	SIC code	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
[Dollars in millions]												
Distribution by industry:												
Professional and scientific instruments.....	38	\$351	\$272	\$191	\$263	\$737	\$1,865	\$2,221	\$2,577	\$3,384	\$3,460 (S)	\$3,942
Scientific and mechanical measuring instruments.....	381-82	(D)	(D)	(S)	(S)	(S)	(D)	2,143	2,484	3,266	3,358 (S)	(D)
Optical, surgical, photographic, and other instruments.....	384-87	(D)	(D)	95	101	87	(D)	78	92	118	102	(D)
Other manufacturing industries 1/.....	27,31,39	2	(D)	(D)	(D)	(D)	(D)	61	(D)	(D)	(D)	(D)
Nonmanufacturing 2/.....		2,706	2,700	3,256	3,729	4,442	5,505	5,570	6,140	5,090	4,620	3,633
Transportation and utilities.....	40-42,44-49	NA	NA	NA	NA	NA	NA	NA	NA	NA	252	186
Communications.....	48	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)
Telephone communications.....	481	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)
Other communications.....	482-484,489	NA	NA	NA	NA	NA	NA	NA	NA	NA	0	0
Electric, gas, and sanitary services.....	49	NA	NA	NA	NA	NA	NA	NA	NA	NA	93	42
Other transportation and utilities.....	40-42,44-47	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)
Trade.....	50-59	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	51 (S)
Finance, insurance, and real estate.....	60-65,67	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)
Services.....	701,72,73,75-81, 83,84,87,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	4,270	3,118
Business services.....	73	NA	NA	NA	NA	NA	NA	NA	NA	NA	612	361
Computer and data processing services....	737	NA	NA	NA	NA	NA	NA	NA	NA	NA	514	(D)
Other business services.....	731-736,738	NA	NA	NA	NA	NA	NA	NA	NA	NA	98	(D)
Health services.....	80	NA	NA	NA	NA	NA	NA	NA	NA	NA	4	(D)
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	3
Other health services.....	802-805,808-809	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)
Engineering and management services.....	87	NA	NA	NA	NA	NA	NA	NA	NA	NA	3,650	2,746
Engineering, architectural, and surveying.....	871	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,883	994
Research, development, and testing.....	873	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	1,708 (S)
Other engineering and management services.....	872,874	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	45

See explanatory information and SOURCE at end of table.

Table A-12a. Federal funds for industrial R&amp;D performance, by industry and size of company: 1986-96

Page 3 of 3

Industry and size of company	SIC code	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
[Dollars in millions]												
Distribution by industry:												
Other services.....	701,72,75-79, 81,83,84,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	\$4	(D)
Other nonmanufacturing industries 1/.....	07-12,14,15, 161-162,17	NA	NA	NA	NA	NA	NA	NA	NA	NA	11	(D)
Distribution by size of company: [Number of employees]												
Total.....		\$27,891	\$30,752	\$30,343	\$28,554	\$28,125	\$26,372	\$24,722	\$22,809	\$22,463	\$23,451	\$23,653
Fewer than 500.....		868	963	816	901	895	1,887	2,025	1,614	1,164	1,978	2,301
500 to 999.....		137	115	131	117	(S)	181	151	182	182	225	219
1,000 to 4,999.....		1,229	981	1,093	958	881	1,050	(S)	1,115	1,083	798	512
5,000 to 9,999.....		796	748	864	740	257	816	763	764	825	243	468
10,000 to 24,999.....		2,004	2,362	1,705	1,129	1,526	3,373	3,416	2,816	2,348	1,946 (S)	1,031 (S)
25,000 or more.....		23,213	25,583	25,734	24,709	24,436	19,065	17,346	16,319	16,862	18,261	19,122

1/ Beginning in 1996 manufacturing companies with fewer than 50 employees and nonmanufacturing companies with fewer than 15 employees were sampled separately without regard to industry classification to minimize year-to-year variation in survey estimates. Estimates for manufacturing companies in this group are combined with those for companies in "Other manufacturing industries." Estimates for nonmanufacturing companies in this group are combined with those for companies in "Other nonmanufacturing industries." As a result, statistics for "Other manufacturing industries" and for "Other nonmanufacturing industries" for 1996 are not comparable with statistics for prior years.

2/ Until 1995, data were not broken down below this level of detail for most nonmanufacturing industries.

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.

NA = Not available.

**NOTE:** As a result of a new sample design, statistics for 1988-91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

Table A-13a. Number of R&amp;D-performing companies reporting Federal R&amp;D funds and total number of R&amp;D-performing companies, by industry and size of company: 1996

Page 1 of 3

Industry	SIC code	Total		Fewer than 500 employees		500 to 999 employees		1,000 to 4,999 employees		5,000 to 9,999 employees		10,000 to 24,999 employees		25,000 or more employees	
		Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal
		Size of company													
All Industries.....		34,569	2,574	31,519	2,345	1,132	39	1,324	64	292	58	175	25	127	44
Manufacturing.....		19,090	1,380	16,846	1,205	862	26	973	43	202	53	131	19	76	34
Food, kindred, and tobacco products.....	20,21	645	0	449	0	63	0	94	0	16	0	11	0	12	0
Textiles and apparel.....	22,23	451	2	317	1	65	0	51	0	9	1	8	0	1	0
Lumber, wood products, and furniture.....	24,25	429	2	356	1	23	0	33	0	11	0	4	0	2	1
Paper and allied products.....	26	197	2	107	0	11	0	57	1	6	0	10	0	6	1
Chemicals and allied products.....	28	618	19	430	2	52	0	89	5	22	6	17	4	8	2
Industrial chemicals.....	281-82,286	169	14	94	0	25	0	31	3	8	5	8	4	3	2
Drugs and medicines.....	283	100	5	58	2	6	0	22	2	5	1	6	0	3	0
Other chemicals.....	284-85,287-89	349	0	278	0	21	0	37	0	9	0	3	0	2	0
Petroleum refining and extraction.....	13,29	124	54	104	50	1	0	5	0	1	1	9	2	4	1
Rubber products.....	30	558	4	389	0	83	0	73	2	7	2	4	0	2	0
Stone, clay, and glass products.....	32	248	5	200	1	15	1	24	2	5	1	4	0	0	0
Primary metals.....	33	231	10	163	2	16	1	31	2	13	1	5	3	3	1
Ferrous metals and products.....	331-32,3398-99	137	3	102	0	3	0	21	1	9	1	2	1	1	0
Nonferrous metals and products.....	333-36	94	7	61	2	13	1	10	1	4	0	3	2	2	1
Fabricated metal products.....	34	1,005	9	823	2	91	1	68	2	10	2	11	2	1	0
Machinery.....	35	1,875	22	1,534	8	109	1	185	3	26	4	18	4	3	2
Office, computing, and accounting machines.....	357	151	5	114	1	12	1	12	0	7	2	5	0	1	1
Other machinery, except electrical.....	351-56,358-59	1,724	17	1,420	7	97	0	173	3	19	2	13	4	2	1
Electrical equipment.....	36	1,497	69	1,178	30	155	14	126	16	18	2	12	2	9	6
Radio and TV receiving equipment.....	365	51	1	42	0	5	0	3	1	1	0	0	0	0	0
Communication equipment.....	366	290	10	232	5	27	1	23	1	4	1	1	0	2	2
Electronic components.....	367	588	46	466	18	61	12	46	13	7	0	4	2	4	2
Other electrical equipment.....	361-64,369	569	12	437	7	62	1	54	1	6	1	7	0	3	2
Transportation equipment.....	37	346	52	204	2	52	1	25	2	40	31	10	1	16	15
Motor vehicles and motor vehicles equipment.....	371	179	5	100	0	51	0	9	1	8	1	7	0	4	3
Other transportation equipment.....	373-75,379	94	30	52	0	0	0	10	0	28	27	2	0	3	3
Aircraft and missiles.....	372,376	73	17	52	2	1	1	6	1	4	3	1	1	9	9

See explanatory information and SOURCE at end of table.

Table A-13a. Number of R&amp;D-performing companies reporting Federal R&amp;D funds and total number of R&amp;D-performing companies, by industry and size of company: 1996

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Industry	SIC code	Total		Fewer than 500 employees		500 to 999 employees		1,000 to 4,999 employees		5,000 to 9,999 employees		10,000 to 24,999 employees		25,000 or more employees	
		Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal
		Size of company													
Professional and scientific instruments.....	38	877	89	727	67	61	7	72	8	10	2	2	1	5	4
Scientific and mechanical measuring instruments.....	381-82	468	59	395	45	39	5	27	4	3	1	1	1	3	3
Optical, surgical, photographic, and other instruments.....	384-87	409	30	332	22	22	2	45	4	7	1	1	0	2	1
Other manufacturing industries 1/.....	27,31,39	9,990	1,040	9,865	1,039	65	0	41	0	9	0	6	0	4	1
Nonmanufacturing .....		15,479	1,194	14,674	1,140	270	13	351	20	90	5	44	6	51	10
Transportation and utilities.....	40-42,44-49	274	10	167	0	4	0	53	2	20	2	13	1	18	5
Communications.....	48	38	4	22	0	2	0	3	0	1	0	0	0	10	4
Telephone communications.....	481	11	4	0	0	0	0	0	0	1	0	0	0	10	4
Other communications.....	482-484,489	27	0	22	0	2	0	3	0	0	0	0	0	0	0
Electric, gas, and sanitary services.....	49	122	5	43	0	2	0	45	1	18	2	11	1	3	1
Other transportation and utilities.....	40-42,44-47	114	1	102	0	0	0	4	1	1	0	2	0	5	0
Trade.....	50-59	2,950	55	2,695	50	119	3	91	0	31	0	5	1	9	1
Finance, insurance, and real estate.....	60-65,67	308	1	210	1	3	0	73	0	10	0	2	0	10	0
Services.....	701,72,73, 75-81,83, 84,87,89	4,896	612	4,601	576	124	10	111	18	23	1	24	4	13	3
Business services.....	73	2,750	133	2,564	124	90	3	63	5	19	0	8	0	7	1
Computer and data processing services....	737	2,366	130	2,217	122	81	2	52	5	8	0	6	0	2	1
Other business services.....	731-736,738	384	3	347	2	8	1	11	0	11	0	2	0	5	0
Health services.....	80	351	7	337	3	4	2	6	0	1	0	3	2	0	0
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	317	6	307	2	3	2	4	0	0	0	3	2	0	0
Other health services.....	802-805, 808-809	34	1	30	1	1	0	2	0	1	0	0	0	0	0

See explanatory information and SOURCE at end of table.

Table A-13a. Number of R&amp;D-performing companies reporting Federal R&amp;D funds and total number of R&amp;D-performing companies, by industry and size of company: 1996

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Industry	SIC code	Total		Fewer than 500 employees		500 to 999 employees		1,000 to 4,999 employees		5,000 to 9,999 employees		10,000 to 24,999 employees		25,000 or more employees	
		Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal
		Size of company													
Engineering and management services.....	87	1,413	469	1,342	447	27	5	33	13	1	1	5	2	5	1
Engineering, architectural, and surveying....	871	593	213	557	201	11	2	21	7	1	1	3	2	0	0
Research, development, and testing.....	873	661	230	639	225	12	3	4	1	0	0	1	0	5	1
Other engineering and management services.....	872,874	159	26	145	21	4	0	8	5	0	0	1	0	0	0
Other services.....	701,72,75-79, 81,83,84,89	382	3	359	2	3	0	9	0	2	0	8	0	1	1
Other nonmanufacturing industries 1/.....	07-12,14,15, 161-162,17	7,051	516	7,000	513	19	0	23	0	6	2	1	0	1	1

1/ Beginning in 1996 manufacturing companies with fewer than 50 employees and nonmanufacturing companies with fewer than 15 employees were sampled separately without regard to industry classification to minimize year-to-year variation in survey estimates. Estimates for manufacturing companies in this group are combined with those for companies in "Other manufacturing industries." Estimates for nonmanufacturing companies in this group are combined with those for companies in "Other nonmanufacturing industries." As a result, statistics for "Other manufacturing industries" and for "Other nonmanufacturing industries" for 1996 are not comparable with statistics for prior years.

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

**Table A-14a. Industry-administered federally funded R&D centers (FFRDC's)—funds by character of work, full-time-equivalent (FTE)  
R&D scientists and engineers, and total number of employees: 1986–96**

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Item	1986	1987	1988	1989	1990	1991	1992	1993 3/	1994	1995	1996
[Dollars in millions]											
Total R&D funds.....	\$1,891	\$1,995	\$2,122	\$2,195	\$2,323	\$2,277	\$2,353	\$1,965	\$2,202	\$2,273	\$2,297
Basic research.....	117	142	337	398	499	461	474	492	503	530	708
Applied research.....	629	623	371	374	386	433	507	435	503	535	231
Development.....	1,145	1,230	1,414	1,423	1,438	1,383	1,373	1,039	1,196	1,209	1,358
[Employment ]											
Number of FTE R&D scientists and engineers 1/.....	7,432	8,432	10,994	11,618	12,438	11,977	11,770	8,083	8,362	9,033	8,696
Total employment 2/.....	24,156	33,804	36,143	35,716	42,153	39,697	40,755	23,930	23,905	24,031	21,735

1/ These data were recorded in January of the year following that listed.

2/ These data were recorded in March of the year listed.

3/ The number of industry-administered FFRDCs remained the same in 1993 compared with 1992, however the levels of R&D performed and employment decreased because of changes in contract requirements and funding.

**NOTE:** Industry-administered FFRDC's conduct R&D almost exclusively for use by the Federal Government. Data for these FFRDC's administered by industry are included in Federal R&D support shown in other tables under the industry classifications of the administering firms. See section C for a listing of industry-administered FFRDC's and their locations.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

**Table A-15a. Concentration of total, Federal, and company and other R&D funds and net sales of R&D-performing companies, by size of R&D program: 1986-96**

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Companies ranked by size of R&D program	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Percent of total (company, Federal, and other) R&D funds											
First 4 (1-4).....	19%	19%	18%	19%	18%	16%	15%	17%	15%	16%	15%
Next 4 (5-8).....	11	12	12	13	13	8	8	7	8	8	8
Next 12 (9-20).....	14	16	17	16	15	12	13	13	14	13	13
Next 20 (21-40).....	13	12	12	12	12	11	11	12	13	12	12
Next 60 (41-100).....	15	14	15	15	16	15	15	16	15	14	14
Next 100 (101-200).....	10	8	8	8	9	12	12	8	9	8	9
Next 200 (201-400).....	8	6	7	6	7	6	6	7	7	7	7
Percent of Federal R&D funds											
First 4 (1-4).....	30	31	31	36	38	14	11	23	26	35	37
Next 4 (5-8).....	16	18	18	15	16	21	18	17	19	19	20
Next 12 (9-20).....	28	27	27	30	26	21	27	32	32	27	23
Next 20 (21-40).....	15	15	15	11	12	15	13	16	13	8	7
Next 60 (41-100).....	7	7	6	6	6	13	11	5	7	5	5
Next 100 (101-200).....	2	1	3	1	1	3	4	5	2	3	4
Next 200 (201-400).....	1	0	0	0	0	2	2	2	1	3	4
Percent of company and other (except Federal) R&D funds											
First 4 (1-4).....	20	20	21	22	21	17	17	17	16	16	15
Next 4 (5-8).....	7	7	7	7	7	7	8	7	7	7	7
Next 12 (9-20).....	12	12	12	13	12	10	12	12	12	11	11
Next 20 (21-40).....	10	11	12	12	13	10	11	11	11	11	10
Next 60 (41-100).....	16	16	16	16	17	16	17	14	14	14	14
Next 100 (101-200).....	10	10	10	10	10	15	14	9	9	9	10
Next 200 (201-400).....	8	8	8	8	8	7	7	8	8	8	8
Percent of net sales ranked by size of total R&D funds											
First 4 (1-4).....	8	7	7	6	8	7	8	8	8	8	6
Next 4 (5-8).....	5	5	5	5	4	3	3	3	2	2	3
Next 12 (9-20).....	5	5	5	5	5	4	4	4	5	6	6
Next 20 (21-40).....	7	7	6	5	5	4	4	4	5	4	4
Next 60 (41-100).....	10	11	11	12	12	12	12	11	10	9	8
Next 100 (101-200).....	10	8	9	8	9	9	9	8	8	8	11
Next 200 (201-400).....	9	12	10	11	12	11	11	10	10	10	11

**NOTES:** Companies were ranked individually for each year; therefore, particular companies comprising the size groups may have changed from year to year.

As a result of a new sample design, statistics for 1988-91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

Table A-16a. Domestic net sales of R&amp;D-performing companies, by industry and size of company: 1995–96

Page 1 of 5

Industry	SIC code	Total	Size of company							
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees		
[Dollars in millions]										
1995										
All Industries.....		\$3,921,561	\$374,478	\$147,062	\$615,336	\$466,186	\$749,478	\$1,569,021		
Manufacturing.....		2,756,605	235,280	103,696	475,358	309,009	578,348	1,054,914		
Food, kindred, and tobacco products.....	20,21	313,839	9,809	7,917	54,931	33,436	60,183	147,563		
Textiles and apparel.....	22,23	42,477	(D)	3,904	10,816	4,714	13,677	(D)		
Lumber, wood products, and furniture.....	24,25	31,969	(D)	3,082	11,090	6,433	(D)	(D)		
Paper and allied products.....	26	138,086	2,128	2,552	21,231	10,398	38,581	63,196		
Chemicals and allied products.....	28	371,302	24,525	14,381	64,432	88,643	95,305	84,015		
Industrial chemicals.....	281-82,286	133,416	9,180	9,192	25,760	9,930	46,587	32,767		
Drugs and medicines.....	283	97,970	3,097	1,416	17,005	4,443	(D)	(D)		
Other chemicals.....	284-85,287-89	139,915	12,248	3,773	21,667	74,270	(D)	(D)		
212	Petroleum refining and extraction.....	13,29	245,662	1,053	(D)	20,614	(D)	136,022	78,656	
	Rubber products.....	30	76,816	22,555	(D)	19,650	7,385	7,583	(D)	
	Stone, clay, and glass products.....	32	30,363	2,953	2,883	8,098	3,795	12,634	0	
	Primary metals.....	33	115,664	4,145	4,714	29,665	25,053	19,425	32,662	
	Ferrous metals and products.....	331-32,3398-99	66,175	1,102	939	14,073	(D)	(D)	(D)	
	Nonferrous metals and products.....	333-36	49,489	3,042	3,775	15,592	(D)	(D)	(D)	
	Fabricated metal products.....	34	89,012	17,182	7,178	20,867	10,304	33,480	0	
	Machinery.....	35	269,689	73,687	17,591	63,652	36,592	46,915	31,252	
	Office, computing, and accounting machines.....	357	57,983	4,885	3,557	18,649	13,138	(D)	(D)	
	Other machinery, except electrical.....	351-56,358-59	211,706	68,802	14,034	45,003	23,454	(D)	(D)	
Electrical equipment.....	36	315,070	32,757	15,181	60,102	24,103	42,146	140,782		
	Radio and TV receiving equipment.....	365	6,921	1,051	782	5,088	0	0	0	
	Communication equipment.....	366	47,827	9,771	4,132	12,528	(D)	(D)	(D)	
	Electronic components.....	367	120,519	12,479	5,998	26,438	(D)	(D)	(D)	
	Other electrical equipment.....	361-64,369	139,803	9,456	4,269	16,048	7,452	16,967	85,611	

See explanatory information and SOURCE at end of table.

Table A-16a. Domestic net sales of R&amp;D-performing companies, by industry and size of company: 1995-96

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Industry	SIC code	Total	Size of company							
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees		
[Dollars in millions]										
1995										
Transportation equipment.....	37	\$532,826	\$7,430	\$2,889	\$51,802	\$29,267	\$45,941	\$395,497		
Motor vehicles and motor vehicles equipment.....	371	376,945	6,336	2,143	42,788	23,508	(D)	(D)		
Other transportation equipment.....	373-75,379	24,978	(D)	451 (S)	5,132	0	8,620	(D)		
Aircraft and missiles.....	372,376	130,904	(D)	296	3,881	5,759	(D)	117,695		
Professional and scientific instruments.....	38	116,696	20,099	10,402	24,918	9,897	(D)	(D)		
Scientific and mechanical measuring instruments.....	381-82	57,720	12,513	4,030	9,395	3,020	(D)	(D)		
Optical, surgical, photographic, and other instruments.....	384-87	58,976	7,586	6,373	15,522	6,877	(D)	(D)		
Other manufacturing industries.....	27,31,39	67,134	9,696	(D)	13,491	(D)	19,640	11,229		
Nonmanufacturing.....		1,164,955	139,198	43,366	139,978	157,177	171,130	514,106		
Transportation and utilities.....	40-42,44-49	460,565	(D)	(D)	43,898	50,520	75,016	288,497		
Communications.....	48	220,446	433	(D)	7,021	(D)	0	211,201		
Telephone communications.....	481	218,474	(D)	0	(D)	(D)	0	211,201		
Other communications.....	482-484,489	1,972	(D)	(D)	(D)	0	0	0		
Electric, gas, and sanitary services.....	49	168,314	(D)	0	32,841	48,195	(D)	(D)		
Other transportation and utilities.....	40-42,44-47	71,805	(D)	0	4,036	(D)	(D)	(D)		
Trade.....	50-59	315,337	43,687	5,136	47,538	59,928	24,586	134,462		
Finance, insurance, and real estate.....	60-65,67	105,961	(D)	14,389	11,717	24,087	(D)	(D)		
Services.....	701,72,73,75-81, 83,84,87,89	230,175	90,519	9,968	30,488	14,721	50,754	33,725		
Business services.....	73	91,588	20,395	7,000	21,397	8,102	18,490	16,205		
Computer and data processing services.....	737	76,697	18,576	6,412	19,216	(D)	(D)	9,443		
Other business services.....	731-736,738	14,891	1,819	589	2,181	(D)	(D)	6,762		
Health services.....	80	14,480	3,097	(D)	993	0	(D)	(D)		
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	13,812	2,906	(D)	572	0	(D)	(D)		
Other health services.....	802-805,808-809	668	191	0	421 (S)	0	(D)	0		

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See explanatory information and SOURCE at end of table.

Table A-16a. Domestic net sales of R&amp;D-performing companies, by industry and size of company: 1995-96

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Industry	SIC code	Total	Size of company							
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees		
[Dollars in millions]										
1995										
Engineering and management services.....	87	\$98,178	\$64,091	(D)	\$6,246	\$4,113	\$10,322	(D)		
Engineering, architectural, and surveying.....	871	51,343	26,723	\$1,379	5,004	(D)	(D)	(D)		
Research, development, and testing.....	873	39,209	35,844	645	(D)	0	(D)	\$0		
Other engineering and management services.....	872,874	7,627	1,524	(D)	(D)	(D)	(D)	0		
Other services.....	701,72,75-79,81, 83,84,89	25,929	2,936	442	1,852	2,506	(D)	(D)		
Other nonmanufacturing industries.....	07-12,14,15,161-162,17	52,917	2,349	(D)	6,337	7,921	(D)	(D)		
1996										
All Industries.....		4,076,076	339,405	147,701	618,426	422,915	791,806	1,755,822		
Manufacturing.....		2,765,725	201,551	109,851	419,199	286,671	600,657	1,147,797		
Food, kindred, and tobacco products.....	20,21	350,424	17,940	15,549	55,728	39,762	50,258	171,186		
Textiles and apparel.....	22,23	50,569	5,580	(D)	13,795	5,015	16,958	(D)		
Lumber, wood products, and furniture.....	24,25	46,587	5,167	(D)	11,230	9,687	9,325	(D)		
Paper and allied products.....	26	132,978	3,297	1,097	22,488	9,445	39,157	57,493		
Chemicals and allied products.....	28	332,229	14,882	10,517	64,808	50,477	94,658	96,887		
Industrial chemicals.....	281-82,286	142,755	4,902	7,083	27,502	15,716	49,707	37,845		
Drugs and medicines.....	283	97,142	1,298	(D)	14,776	14,444	34,201	(D)		
Other chemicals.....	284-85,287-89	92,333	8,682	(D)	22,530	20,317	10,749	(D)		
Petroleum refining and extraction.....	13,29	248,815	4,025	(D)	10,086	(D)	142,384	90,492		
Rubber products.....	30	70,598	11,699	9,496	23,791	(D)	5,869	(D)		
Stone, clay, and glass products.....	32	37,429	3,830	1,766	9,761	6,374	15,698	0		
Primary metals.....	33	103,908	6,473	(D)	18,436	21,358	(D)	34,436		
Ferrous metals and products.....	331-32,3398-99	60,179	3,793	(D)	8,802	15,530	(D)	(D)		
Nonferrous metals and products.....	333-36	43,729	2,680	(D)	9,635	5,828	12,386	(D)		
Fabricated metal products.....	34	95,343	15,960	(D)	21,694	13,931	25,781	(D)		
Machinery.....	35	259,426	31,320	(D)	55,447	37,834	70,245	(D)		
Office, computing, and accounting machines.....	357	81,929	3,045	(D)	9,976	8,893	27,360	(D)		
Other machinery, except electrical.....	351-56,358-59	177,497	28,275	(D)	45,471	28,941	42,884	(D)		

See explanatory information and SOURCE at end of table.

Table A-16a. Domestic net sales of R&amp;D-performing companies, by industry and size of company: 1995-96

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Industry	SIC code	Total	Size of company							
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees		
[Dollars in millions]										
1996										
Electrical equipment.....	36	\$334,058	\$27,254	\$17,217	\$60,027	\$33,196	\$47,683	\$148,680		
Radio and TV receiving equipment.....	365	7,064	1,302	875	(D)	(D)	0	0		
Communication equipment.....	366	51,140	6,075	3,510	(D)	(D)	(D)	(D)		
Electronic components.....	367	146,303	9,842	6,691	26,665	16,164	16,723	70,218		
Other electrical equipment.....	361-64,369	129,551	10,034	6,142	17,117	6,049	(D)	(D)		
Transportation equipment.....	37	500,269	3,357	3,636	13,572	30,538	45,175	403,992		
Motor vehicles and motor vehicles equipment.....	371	348,614	(D)	(D)	5,876	24,879	40,050	273,012		
Other transportation equipment.....	373-75,379	25,444	(D)	0	4,619	(D)	(D)	15,984		
Aircraft and missiles.....	372,376	126,211	1,643 (S)	(D)	3,078	(D)	(D)	114,997		
Professional and scientific instruments.....	38	105,999	13,450	6,662	25,613	10,784	(D)	(D)		
Scientific and mechanical measuring instruments.....	381-82	48,652	7,103	4,668	9,732	3,365	(D)	(D)		
Optical, surgical, photographic, and other instruments....	384-87	57,346	6,348	1,994	15,882	7,419	(D)	(D)		
21. Other manufacturing industries 1/.....	27,31,39	97,093	37,318	6,174	12,721	9,826	11,700	19,354		
Nonmanufacturing.....		1,310,352	137,855	37,851	199,227	136,244	191,149	608,026		
Transportation and utilities.....	40-42,44-49	456,861	6,367	1,050	52,647	53,346	67,492	275,960		
Communications.....	48	211,857	3,419	(D)	(D)	(D)	0	(D)		
Telephone communications.....	481	206,298	0	0	0	(D)	0	(D)		
Other communications.....	482-484,489	5,559	3,419	(D)	(D)	0	0	0		
Electric, gas, and sanitary services.....	49	182,121	802	(D)	46,126	50,330	(D)	(D)		
Other transportation and utilities.....	40-42,44-47	62,884	2,146	0	(D)	(D)	(D)	49,177		
Trade.....	50-59	274,435	40,249	21,139	31,143	38,012	32,368	111,523		
Finance, insurance, and real estate.....	60-65,67	296,786	3,271	905	72,094	20,624	(D)	(D)		
Services.....	701,72,73,75-81, 83,84,87,89	235,129	68,045	12,544	36,407	13,258	79,343	25,533		
Business services.....	73	103,818	24,615	8,619	20,320	10,065	21,916	18,283		
Computer and data processing services.....	737	81,079	22,761	8,072	17,617	6,508	(D)	(D)		
Other business services.....	731-736,738	22,739	1,853	546	2,702	3,558	(D)	(D)		

See explanatory information and SOURCE at end of table.

Table A-16a. Domestic net sales of R&amp;D-performing companies, by industry and size of company: 1995-96

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Industry	SIC code	Total	Size of company							
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees		
[Dollars in millions]										
1996										
Health services.....		80	\$12,403	\$1,564	(D)	\$1,097	(D)	\$8,616	\$0	
Offices and clinics of medical doctors, hospitals, medical and dental labs.....		801,806,807	11,740	1,473	(D)	(D)	\$0	8,616	0	
Other health services.....	802-805,808-809	663	91	(D)	(D)	(D)	0	0	0	
Engineering and management services.....		87	75,448	40,403	\$2,523	12,664	(D)	15,390	(D)	
Engineering, architectural, and surveying.....		871	26,724	5,464	782	6,883	(D)	(D)	0	
Research, development, and testing.....		873	39,127	32,882	1,056	(D)	0	(D)	(D)	
Other engineering and management services.....		872,874	9,598	2,057	685	(D)	0	(D)	0	
Other services.....	701,72,75-79,81, 83,84,89	43,460	1,463	(D)	2,326	(D)	33,420	(D)		
Other nonmanufacturing industries 1/.....	07-12,14,15,161-162,17	47,141	19,922	2,213	6,937	11,004	(D)	(D)		

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1/ Beginning in 1996 manufacturing companies with fewer than 50 employees and nonmanufacturing companies with fewer than 15 employees were sampled separately without regard to industry classification to minimize year-to-year variation in survey estimates. Estimates for manufacturing companies in this group are combined with those for companies in "Other manufacturing industries." Estimates for nonmanufacturing companies in this group are combined with those for companies in "Other nonmanufacturing industries." As a result, statistics for "Other manufacturing industries" and for "Other nonmanufacturing industries" for 1996 are not comparable with statistics for prior years.

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

Table A-17a. Total (company, Federal, and other) R&amp;D funds as a percent of net sales in R&amp;D-performing companies, by industry and size of company: 1986–96

Page 1 of 3

Industry and size of company	SIC code	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
All Industries 1/.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	3.4%	3.5%
Distribution by industry:												
Manufacturing.....		4.7%	4.6%	4.5%	4.3%	4.2%	4.2%	4.2%	3.8%	3.6%	3.6	4.0
Food, kindred, and tobacco products.....	20,21	(D)	0.6	(D)	(D)	(D)	0.5	0.5	0.5	0.5	0.5	0.4
Textiles and apparel.....	22,23	(D)	(D)	(D)	(D)	(D)	0.6	(D)	(D)	(D)	(D)	(D)
Lumber, wood products, and furniture.....	24,25	0.6	0.6	(D)	0.6	0.6	(D)	(D)	(D)	(D)	(D)	(D)
Paper and allied products.....	26	(D)	(D)	(D)	0.8	1.0	1.1	(D)	(D)	(D)	(D)	(D)
Chemicals and allied products.....	28	5.2	5.3	5.3	5.4	5.3	5.4	5.5	(D)	(D)	4.7	(D)
Industrial chemicals.....	281–82,286	4.6	4.7	4.4	4.2	4.5	4.6	4.6	(D)	(D)	(D)	(D)
Drugs and medicines.....	283	8.5	(D)	8.8	(D)	(D)	8.9	9.6	12.5	10.2	10.4	10.1
Other chemicals.....	284–85,287–89	3.3	(D)	3.4	(D)	(D)	3.1	2.7	(D)	(D)	(D)	2.7
Petroleum refining and extraction.....	13,29	(D)	1.0	1.0	0.9	0.9	1.0	0.9	0.9	0.8	0.7	0.7
Rubber products.....	30	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stone, clay, and glass products.....	32	2.5	2.6	(D)	(D)	(D)	(D)	(D)	1.5	1.7	1.5	1.3
Primary metals.....	33	(D)	0.9	0.8	0.8	0.8	0.8	0.6	0.7	0.6	0.5	(D)
Ferrous metals and products.....	331–32,3398–99	(D)	(D)	0.5	(D)	(D)	(D)	(D)	0.5	(D)	(D)	(D)
Nonferrous metals and products.....	333–36	1.5	(D)	1.0	(D)	(D)	(D)	(D)	1.2	(D)	(D)	(D)
Fabricated metal products.....	34	1.5	1.5	1.3	1.5	1.4	1.5	1.5	1.4	1.2	1.1	(D)
Machinery.....	35	(D)	(D)	7.7	7.9	7.7	8.1	7.8	4.6	3.8	(D)	5.2
Office, computing, and accounting machines.....	357	(D)	(D)	(D)	(D)	(D)	(D)	(D)	9.9	7.9	(D)	(D)
Other machinery, except electrical.....	351–56,358–59	3.0	3.0	2.9	(D)	(D)	(D)	(D)	2.6	2.5	2.4	(D)
Electrical equipment.....	36	7.9	8.2	7.5	7.3	6.5	6.5	5.6	6.2	5.9	6.0	6.7
Radio and TV receiving equipment.....	365	3.6	3.2	2.4	1.8	1.6	(D)	(D)	(D)	(D)	(D)	(D)
Communication equipment.....	366	9.9	10.2	10.7	11.6	10.0	(D)	(D)	(D)	(D)	(D)	(D)
Electronic components.....	367	(D)	10.0	9.0	(D)	8.3	7.9	7.5	8.1	7.5	(D)	(D)
Other electrical equipment.....	361–64,369	(D)	2.7	2.5	(D)	3.7	(D)	(D)	(D)	(D)	(D)	(D)
Transportation equipment.....	37	8.3	8.7	8.9	8.1	7.5	7.3	7.1	6.4	5.9	6.1	6.5
Motor vehicles and motor vehicles equipment....	371	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other transportation equipment.....	373–75,379	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Aircraft and missiles.....	372,376	13.4	14.7	16.3	13.5	11.8	12.1	11.8	12.5	13.8	12.9	12.9

See explanatory information and SOURCE at end of table.

Table A-17a. Total (company, Federal, and other) R&amp;D funds as a percent of net sales in R&amp;D-performing companies, by industry and size of company: 1986-96

Page 2 of 3

Industry and size of company	SIC code	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Distribution by industry:												
Professional and scientific instruments.....	38	8.8%	7.9%	7.4%	7.2%	8.0%	9.1%	9.4%	9.7%	9.2%	10.3%	11.5%
Scientific and mechanical measuring instruments.....	381-82	(D)	(D)	7.9	7.4	8.6	10.0	10.6	11.5	11.0	12.4	(D)
Optical, surgical, photographic, and other instruments.....	384-87	(D)	(D)	7.3	7.3	7.7	8.1	8.3	8.1	7.3	8.2	(D)
Other manufacturing industries 2/.....	27,31,39	1.2	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Nonmanufacturing 1/.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	2.7	2.5
Transportation and utilities.....	40-42,44-49	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.2	1.0
Communications.....	48	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)
Telephone communications.....	481	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)
Other communications.....	482-484,489	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0	1.3
Electric, gas, and sanitary services.....	49	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.3	0.2
Other transportation and utilities.....	40-42,44-47	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)
Trade.....	50-59	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	2.3
Finance, insurance, and real estate.....	60-65,67	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)
Services.....	701,72,73,75-81, 83,84,87,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.8	8.1
Business services.....	73	NA	NA	NA	NA	NA	NA	NA	NA	NA	10.1	10.2
Computer and data processing services.....	737	NA	NA	NA	NA	NA	NA	NA	NA	NA	11.8	(D)
Other business services.....	731-736,738	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.6	(D)
Health services.....	80	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.2	(D)
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	6.1 (S)
Other health services.....	802-805,808-809	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)
Engineering and management services.....	87	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.8	9.7
Engineering, architectural, and surveying.....	871	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.7	6.2
Research, development, and testing.....	873	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	14.0
Other engineering and management services.....	872,874	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	1.8

See explanatory information and SOURCE at end of table.

Table A-17a. Total (company, Federal, and other) R&amp;D funds as a percent of net sales in R&amp;D-performing companies, by industry and size of company: 1986-96

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Industry and size of company	SIC code	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Distribution by industry:												
Other services.....	701,72,75-79,81, 83,84,89	NA	0.6%	(D)								
Other nonmanufacturing industries 2/.....	07-12,14,15, 161-162,17	NA	0.8	(D)								
Distribution by size of company: [Number of employees]												
Total 1/.....		NA	3.4	3.5%								
Fewer than 500.....		NA	4.4	6.0								
500 to 999.....		NA	3.2	3.1								
1,000 to 4,999.....		NA	2.8	3.0								
5,000 to 9,999.....		NA	2.0	2.7								
10,000 to 24,999.....		NA	2.3	2.5								
25,000 or more.....		NA	4.3	4.0								

1/ Beginning in 1995 this table included both manufacturing and nonmanufacturing companies. Only manufacturing companies were included in prior years.

2/ Beginning in 1996 manufacturing companies with fewer than 50 employees and nonmanufacturing companies with fewer than 15 employees were sampled separately without regard to industry classification to minimize year-to-year variation in survey estimates. Estimates for manufacturing companies in this group are combined with those for companies in "Other manufacturing industries." Estimates for nonmanufacturing companies in this group are combined with those for companies in "Other nonmanufacturing industries." As a result, statistics for "Other manufacturing industries" and for "Other nonmanufacturing industries" for 1996 are not comparable with statistics for prior years.

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.

NA = Not available.

**NOTE:** As a result of a new sample design, statistics for 1988-91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

**Table A-18a. Company and other (except Federal) R&D funds as a percent of net sales in R&D-performing companies,  
by industry and size of company: 1986–96**

Page 1 of 3

Industry and size of company	SIC code	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
All Industries 1/.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	2.8%	3.0%
Distribution by industry:												
Manufacturing.....		3.2%	3.1%	3.1%	3.1%	3.1%	3.2%	3.3%	3.1%	2.9%	2.9	3.3
Food, kindred, and tobacco products.....	20,21	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4
Textiles and apparel.....	22,23	0.5	0.4	0.4	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.8
Lumber, wood products, and furniture.....	24,25	0.6	0.6	0.6	0.6	0.6	0.9	0.9	0.7	0.6	0.7	1.4
Paper and allied products.....	26	0.7	0.6	0.8	0.8	1.0	1.1	1.0	1.1	1.0	1.0	1.2
Chemicals and allied products.....	28	5.1	5.2	5.2	5.4	5.3	5.3	5.4	6.0	5.1	4.7	5.3
Industrial chemicals.....	281–82,286	4.4	4.4	4.2	4.1	4.4	4.4	4.4	4.4	3.3	3.9	3.7
Drugs and medicines.....	283	8.4	8.7	8.8	8.9	8.8	8.9	9.6	12.5	10.2	10.4	10.1
Other chemicals.....	284–85,287–89	3.3	3.3	3.4	3.9	3.4	3.0	2.7	2.7	2.5	1.4	2.7
Petroleum refining and extraction.....	13,29	1.1	1.0	1.0	0.9	0.9	1.0	0.9	0.9	0.8	0.7	0.7
Rubber products.....	30	1.7	1.6	1.7	1.9	2.1	2.3	2.3	2.1	2.3	1.6	1.8
Stone, clay, and glass products.....	32	2.4	2.5	2.0	1.8	1.7	1.6	1.6	1.5	1.5	1.5	1.2
Primary metals.....	33	1.0	0.9	0.7	0.7	0.8	0.8	0.6	0.7	0.6	0.5	0.6
Ferrous metals and products.....	331–32,3398–99	0.7	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.3	0.3	0.4
Nonferrous metals and products.....	333–36	1.5	1.3	1.0	1.0	1.2	1.2	0.7	1.2	0.9	0.7	1.0
Fabricated metal products.....	34	1.4	1.2	1.1	1.2	1.1	1.2	1.1	1.1	1.0	1.1	1.4
Machinery.....	35	7.3	7.1	6.8	7.3	7.2	7.5	7.3	4.5	3.8	3.6	5.1
Office, computing, and accounting machines.....	357	12.4	12.3	11.2	13.1	14.4	14.9	13.7	9.8	7.9	8.1	9.9
Other machinery, except electrical.....	351–56,358–59	2.9	3.0	2.8	2.6	2.3	2.9	2.9	2.5	2.5	2.4	2.9
Electrical equipment.....	36	5.1	5.4	5.3	5.2	4.5	4.3	4.0	5.4	5.2	5.4	6.1
Radio and TV receiving equipment.....	365	3.6	3.2	2.4	1.8	1.6	1.0	0.6	4.0	1.0	1.6	2.0
Communication equipment.....	366	5.2	5.5	6.1	6.8	6.1	(S)	7.0	10.1	10.3	8.0	8.5
Electronic components.....	367	9.2	8.5	8.0	7.7	7.4	7.2	7.0	7.8	7.3	8.0	8.5
Other electrical equipment.....	361–64,369	2.2	2.6	2.3	2.3	2.2	2.2	2.1	2.3	2.1	2.5	2.6
Transportation equipment.....	37	3.6	3.4	3.5	3.5	3.4	4.0	4.2	3.9	3.7	3.6	4.1
Motor vehicles and motor vehicles equipment....	371	3.3	3.4	3.4	3.7	3.7	4.1	4.0	3.7	3.4	3.6	4.2
Other transportation equipment.....	373–75,379	2.7	2.5	2.6	2.5	2.1	2.1	2.1	1.9	1.2	0.9	1.2
Aircraft and missiles.....	372,376	4.0	3.6	3.9	3.3	3.1	4.0	4.7	4.7	5.3	4.2	4.5

See explanatory information and SOURCE at end of table.

**Table A-18a. Company and other (except Federal) R&D funds as a percent of net sales in R&D-performing companies,  
by industry and size of company: 1986–96**

Page 2 of 3

Industry and size of company	SIC code	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Distribution by industry:												
Professional and scientific instruments.....	38	8.2%	7.5%	7.1%	6.8%	7.1%	7.1%	7.2%	7.2%	6.5%	7.3%	7.7%
Scientific and mechanical measuring instruments.....	381-82	8.4	8.1	7.6	6.9	6.9	6.3	6.2	6.4	5.8	6.6	6.7
Optical, surgical, photographic, and other instruments.....	384-87	8.0	7.2	7.1	7.1	7.5	8.0	8.2	7.9	7.2	8.0	8.6
Other manufacturing industries 2/.....	27,31,39	1.2	1.1	1.0	0.9	0.9	0.8	1.3	1.3	1.1	1.2	2.5
Nonmanufacturing 1/.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.0	0.0
Transportation and utilities.....	40-42,44-49	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.1	1.0
Communications.....	48	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.2	1.9
Telephone communications.....	481	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.1	1.9
Other communications.....	482-484,489	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0	1.3
Electric, gas, and sanitary services.....	49	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.2	0.2
Other transportation and utilities.....	40-42,44-47	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.1	0.3
Trade.....	50-59	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.4	2.3
Finance, insurance, and real estate.....	60-65,67	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.7	0.4
Services.....	701,72,73,75-81, 83,84,87,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.9	6.8
Business services.....	73	NA	NA	NA	NA	NA	NA	NA	NA	NA	9.5	9.9
Computer and data processing services.....	737	NA	NA	NA	NA	NA	NA	NA	NA	NA	11.1	12.4
Other business services.....	731-736,738	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.9	1.1
Health services.....	80	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.2	5.9 (S)
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.3	6.1 (S)
Other health services.....	802-805,808-809	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.4 (S)	3.4
Engineering and management services.....	87	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.1	6.1
Engineering, architectural, and surveying.....	871	NA	NA	NA	NA	NA	NA	NA	NA	NA	2.0	2.5
Research, development, and testing.....	873	NA	NA	NA	NA	NA	NA	NA	NA	NA	7.2	9.7
Other engineering and management services.....	872,874	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.7	1.3

See explanatory information and SOURCE at end of table.

**Table A-18a. Company and other (except Federal) R&D funds as a percent of net sales in R&D-performing companies,  
by industry and size of company: 1986–96**

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Industry and size of company	SIC code	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Distribution by industry:												
Other services.....	701,72,75–79,81, 83,84,89	NA	0.6%	0.7%								
Other nonmanufacturing industries 2/.....	07–12,14,15, 161–162,17	NA	0.8	2.5								
Distribution by size of company: [Number of employees]												
Total 1/.....		NA	0.0	0.0								
Fewer than 500.....		NA	3.9	5.3								
500 to 999.....		NA	3.0	3.0								
1,000 to 4,999.....		NA	2.6	2.9								
5,000 to 9,999.....		NA	2.0	2.6								
10,000 to 24,999.....		NA	2.0	2.4								
25,000 or more.....		NA	3.1	2.9								

1/ Beginning in 1995 this table included both manufacturing and nonmanufacturing companies. Only manufacturing companies were included in prior years.

2/ Beginning in 1996 manufacturing companies with fewer than 50 employees and nonmanufacturing companies with fewer than 15 employees were sampled separately without regard to industry classification to minimize year-to-year variation in survey estimates. Estimates for manufacturing companies in this group are combined with those for companies in "Other manufacturing industries." Estimates for nonmanufacturing companies in this group are combined with those for companies in "Other nonmanufacturing industries." As a result, statistics for "Other manufacturing industries" and for "Other nonmanufacturing industries" for 1996 are not comparable with statistics for prior years.

**KEY:** (S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.

NA = Not available.

**NOTE:** As a result of a new sample design, statistics for 1988–91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

**Table A-19a. Total (company, Federal, and other) funds for performance of basic research, applied research, and development, in current and in constant dollars: 1953-96**

Page 1 of 2

Year	Total		Basic research		Applied research		Development	
	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars
[Dollars in millions]								
1953 1/.....	\$3,630	\$17,988	\$151	\$748	\$726	\$3,598	\$2,753	\$13,642
1954 1/.....	4,070	19,941	166	813	814	3,988	3,090	15,140
1955 1/.....	4,640	22,372	189	911	928	4,474	3,523	16,986
1956.....	6,605	30,764	253	1,178	1,268	5,906	5,084	23,680
1957.....	7,731	34,856	271	1,222	1,670	7,529	5,790	26,105
1958.....	8,389	36,940	295	1,299	1,911	8,415	6,183	27,226
1959.....	9,618	41,908	320	1,394	1,991	8,675	7,307	31,839
1960.....	10,509	45,161	376	1,616	2,029	8,719	8,104	34,826
1961.....	10,908	46,338	395	1,678	1,977	8,398	8,536	36,262
1962.....	11,464	48,087	488	2,047	2,449	10,273	8,527	35,768
1963.....	12,630	52,363	522	2,164	2,457	10,187	9,651	40,012
1964.....	13,512	55,196	549	2,243	2,600	10,621	10,363	42,333
1965.....	14,185	56,831	592	2,372	2,658	10,649	10,935	43,810
1966.....	15,548	60,569	624	2,431	2,843	11,075	12,081	47,063
1967.....	16,385	61,854	629	2,374	2,915	11,004	12,841	48,475
1968.....	17,429	63,057	642	2,323	3,124	11,302	13,663	49,432
1969.....	18,308	63,262	618	2,135	3,287	11,358	14,403	49,768
1970.....	18,067	59,275	602	1,975	3,427	11,243	14,038	46,056
1971.....	18,320	57,143	590	1,840	3,415	10,652	14,315	44,651
1972.....	19,552	58,504	593	1,774	3,514	10,515	15,445	46,215
1973.....	21,249	60,195	631	1,788	3,825	10,836	16,793	47,572
1974.....	22,887	59,493	699	1,817	4,288	11,146	17,900	46,530
1975.....	24,187	57,465	730	1,734	4,570	10,858	18,887	44,873
1976.....	26,997	60,599	819	1,838	5,112	11,475	21,066	47,286
1977.....	29,825	62,882	911	1,921	5,636	11,883	23,278	49,079
1978 1/.....	33,304	65,443	1,035	2,034	6,300	12,380	25,969	51,030
1979.....	38,226	69,212	1,158	2,097	7,225	13,082	29,843	54,034
1980 1/.....	44,505	73,769	1,325	2,196	8,450	14,006	34,730	57,567
1981.....	51,810	78,488	1,614	2,445	10,699	16,208	39,497	59,835
1982 1/.....	58,650	83,583	1,904	2,713	12,323	17,562	44,423	63,308
1983.....	65,268	89,213	2,223	3,039	13,927	19,036	49,118	67,138
1984.....	74,800	98,525	2,608	3,435	15,765	20,765	56,427	74,324
1985.....	84,239	107,270	2,862	3,644	18,255	23,246	63,122	80,379
1986.....	87,823	108,989	4,047	5,022	19,759	24,521	64,017	79,445
1987.....	92,155	110,950	4,324	5,206	19,813	23,854	68,018	81,890
1988.....	97,015	112,690	4,500	5,227	20,748	24,100	71,767	83,363
1989.....	102,055	113,748	5,216	5,814	22,691	25,291	74,148	82,644

See explanatory information and SOURCE at end of table.

**Table A-19a. Total (company, Federal, and other) funds for performance of basic research, applied research, and development, in current and in constant dollars: 1953–96**

Page 2 of 2

Year	Total		Basic research		Applied research		Development	
	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars
[Dollars in millions]								
1990.....	\$109,727	\$117,230	\$5,128	\$5,479	\$24,785	\$26,480	\$79,814	\$85,271
1991.....	116,952	120,173	7,837	8,053	27,446	28,202	81,669	69,446
1992.....	119,110	119,110	7,002	7,002	26,168	26,168	85,940	85,940
1993.....	117,400	114,380	6,919	6,741	24,686	24,051	85,796	83,589
1994.....	119,595	113,802	7,017	6,677	23,490	22,352	89,088	84,773
1995.....	132,103	122,590	6,099	5,660	27,454	25,477	98,552	91,455
1996.....	144,667	131,265	8,207	7,447	29,241	26,532	107,218	97,285

1/ Character-of-work estimates were made by the National Science Foundation (NSF). See: NSF, *National Patterns of R&D Resources: 1996*, Final Report, NSF 96-333.

**NOTES:** The character-of-work estimation procedure was revised for 1986 and later years; hence, these data are not directly comparable with data for 1985 and earlier years. See technical notes for a more complete discussion of this change.

The 1992 gross domestic product (GDP) implicit price deflators were used to convert current dollars to constant dollars.

As a result of a new sample design, statistics for 1988–91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

**Table A-20a. Company and other (except Federal) funds for performance of basic research, applied research, and development, in current and in constant dollars: 1953-96**

Page 1 of 2

Year	Total		Basic research		Applied research		Development	
	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars
[Dollars in millions]								
1953 1/.....	\$2,200	\$10,902	\$132	\$654	\$438	\$2,170	\$1,630	\$8,077
1954 1/.....	2,320	11,367	143	701	492	2,411	1,685	8,256
1955 1/.....	2,460	11,861	162	781	560	2,700	1,738	8,380
1956.....	3,277	15,263	216	1,006	794	3,698	2,267	10,559
1957.....	3,396	15,311	230	1,037	992	4,472	2,174	9,802
1958.....	3,630	15,984	252	1,110	1,137	5,007	2,241	9,868
1959.....	3,983	17,355	248	1,081	1,178	5,133	2,557	11,142
1960.....	4,428	19,029	297	1,276	1,196	5,140	2,935	12,613
1961.....	4,668	19,830	314	1,334	1,165	4,949	3,189	13,547
1962.....	5,029	21,095	345	1,447	1,438	6,032	3,246	13,616
1963.....	5,360	22,222	375	1,555	1,450	6,012	3,535	14,656
1964.....	5,792	23,660	384	1,569	1,560	6,373	3,848	15,719
1965.....	6,445	25,821	406	1,627	1,620	6,490	4,419	17,704
1966.....	7,216	28,111	451	1,757	1,804	7,028	4,961	19,326
1967.....	8,020	30,276	427	1,612	1,849	6,980	5,744	21,684
1968.....	8,869	32,088	462	1,671	2,081	7,529	6,326	22,887
1969.....	9,857	34,060	458	1,583	2,272	7,851	7,127	24,627
1970.....	10,288	33,753	444	1,457	2,378	7,802	7,466	24,495
1971.....	10,654	33,231	456	1,422	2,441	7,614	7,757	24,195
1972.....	11,535	34,515	463	1,385	2,562	7,666	8,510	25,464
1973.....	13,104	37,122	499	1,414	2,832	8,023	9,773	27,686
1974.....	14,667	38,126	536	1,393	3,263	8,482	10,868	28,251
1975.....	15,582	37,021	573	1,361	3,440	8,173	11,569	27,486
1976.....	17,436	39,138	634	1,423	3,912	8,781	12,890	28,934
1977.....	19,340	40,776	701	1,478	4,311	9,089	14,328	30,209
1978 1/.....	22,115	43,456	785	1,543	4,870	9,570	16,460	32,344
1979.....	25,708	46,547	893	1,617	5,670	10,266	19,145	34,664
1980 1/.....	30,476	50,515	1,035	1,716	6,550	10,857	22,891	37,943
1981.....	35,428	53,671	1,313	1,989	8,359	12,663	25,756	39,018
1982 1/.....	40,105	57,154	1,523	2,170	9,363	13,343	29,219	41,640
1983.....	44,588	60,946	1,760	2,406	10,286	14,060	32,542	44,481
1984.....	51,404	67,708	2,132	2,808	11,541	15,202	37,731	49,698
1985.....	57,043	72,638	2,373	3,022	12,908	16,437	41,762	53,180
1986.....	59,932	74,376	3,496	4,339	15,082	18,717	41,354	51,320
1987.....	61,403	73,926	3,583	4,314	15,153	18,243	42,667	51,369
1988.....	66,672	77,445	3,507	4,074	16,531	19,202	46,634	54,169
1989.....	73,501	81,923	3,832	4,271	17,993	20,055	51,676	57,597

See explanatory information and SOURCE at end of table.

**Table A-20a. Company and other (except Federal) funds for performance of basic research, applied research, and development, in current and in constant dollars: 1953-96**

Page 2 of 2

Year	Total		Basic research		Applied research		Development	
	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars
[Dollars in millions]								
1990.....	\$81,602	\$87,182	\$3,760	\$4,017	\$18,432	\$19,692	\$59,410	\$63,472
1991.....	90,580	93,074	6,125	6,294	21,425	22,015	63,030	69,446
1992.....	94,388	94,388	5,816	5,816	21,184	21,184	67,385	67,385
1993.....	94,591	92,158	5,961	5,808	19,956	19,443	68,678	66,912
1994.....	97,131	92,426	6,078	5,784	19,372	18,434	71,683	68,211
1995.....	108,652	100,828	5,379	4,992	23,755	22,044	79,516	73,790
1996.....	121,015	109,804	6,848	6,214	25,370	23,020	88,798	80,572

1/ Character-of-work estimates were made by the National Science Foundation (NSF). See: Nsf, *National Patterns of R&D Resources: 1996*, Final Report, NSF 96-333.

**NOTES:** The character-of-work estimation procedure was revised for 1986 and later years; hence, these data are not directly comparable with data for 1985 and earlier years. See technical notes for a more complete discussion of this change.

The 1992 gross domestic product (GDP) implicit price deflators were used to convert current dollars to constant dollars.

As a result of a new sample design, statistics for 1988-91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

**Table A-21a. Federal funds for performance of basic research, applied research, and development,  
in current and in constant dollars: 1953-96**

Page 1 of 2

Year	Total		Basic research		Applied research		Development	
	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars
[Dollars in millions]								
1953 1/.....	\$1,430	\$7,086	\$19	\$94	\$288	\$1,427	\$1,123	\$5,565
1954 1/.....	1,750	8,574	23	113	322	1,578	1,405	6,884
1955 1/.....	2,180	10,511	27	130	368	1,774	1,785	8,607
1956.....	3,328	15,501	37	172	474	2,208	2,817	1,992
1957.....	4,335	19,545	41	185	678	3,057	3,616	16,303
1958.....	4,759	20,956	43	189	774	3,408	3,942	17,358
1959.....	5,635	24,553	72	314	813	3,542	4,750	20,697
1960.....	6,081	26,132	79	339	833	3,580	5,169	22,213
1961.....	6,240	26,508	81	344	812	3,449	5,347	22,715
1962.....	6,434	26,988	143	600	1,011	4,241	5,281	22,152
1963.....	7,270	30,141	147	609	1,007	4,175	6,116	25,357
1964.....	7,720	31,536	165	674	1,040	4,248	6,515	26,614
1965.....	7,740	31,010	186	745	1,038	4,159	6,516	26,106
1966.....	8,332	32,458	173	674	1,039	4,048	7,120	27,737
1967.....	8,365	31,578	202	763	1,066	4,024	7,097	26,791
1968.....	8,560	30,970	180	651	1,043	3,774	7,337	26,545
1969.....	8,451	29,202	160	553	1,015	3,507	7,276	25,142
1970.....	7,779	25,522	158	518	1,049	3,442	6,572	21,562
1971.....	7,666	23,911	134	418	974	3,038	6,558	20,455
1972.....	8,017	23,989	130	389	952	2,849	6,935	20,751
1973.....	8,145	23,074	132	374	993	2,813	7,020	19,887
1974.....	8,220	21,367	163	424	1,025	2,664	7,032	18,279
1975.....	8,605	20,444	157	373	1,130	2,685	7,318	17,387
1976.....	9,561	21,461	185	415	1,200	2,694	8,176	18,352
1977.....	10,485	22,106	210	443	1,325	2,794	8,950	18,870
1978 1/.....	11,189	21,987	250	491	1,430	2,810	9,509	18,685
1979.....	12,518	22,665	265	480	1,555	2,815	10,698	19,370
1980 1/.....	14,029	23,254	290	481	1,900	3,149	11,839	19,624
1981.....	16,382	24,817	301	456	2,340	3,545	13,741	20,817
1982 1/.....	18,545	26,429	381	543	2,960	4,218	15,204	21,667
1983.....	20,680	28,267	463	633	3,641	4,977	16,576	22,657
1984.....	23,396	30,817	476	627	4,224	5,564	18,696	24,626
1985.....	27,196	34,631	489	623	5,347	6,809	21,360	27,200
1986.....	27,891	34,613	551	684	4,678	5,805	22,662	28,124
1987.....	30,752	37,024	740	891	4,660	5,610	25,352	30,523
1988.....	30,343	35,246	993	1,153	4,217	4,898	25,133	29,194
1989.....	28,554	31,826	1,384	1,543	4,698	5,236	22,472	25,047

See explanatory information and SOURCE at end of table.

**Table A-21a. Federal funds for performance of basic research, applied research, and development,  
in current and in constant dollars: 1953-96**

Page 2 of 2

Year	Total		Basic research		Applied research		Development	
	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars	Current dollars	Constant 1992 dollars
[Dollars in millions]								
1990.....	\$28,125	\$30,048	\$1,368	\$1,462	\$6,353	\$6,787	\$20,404	\$21,799
1991.....	26,372	27,098	1,712	1,759	6,021	6,187	18,639	69,446
1992.....	24,722	24,722	1,186	1,186	4,983	4,983	18,555	18,555
1993.....	22,809	22,222	958	933	4,730	4,608	17,118	16,678
1994.....	22,463	21,375	939	894	4,119	3,919	17,405	16,562
1995.....	23,451	21,762	720	668	3,699	3,433	19,031	17,661
1996.....	23,653	21,462	1,358	1,232	3,871	3,512	18,423 (S)	16,716

1/ Character-of-work estimates were made by the National Science Foundation (NSF). See: NSF, *National Patterns of R&D Resources: 1996*, Final Report, NSF 96-333.

**KEY:** (S) = Indicates computations of more than 50 percent.

**NOTES:** The character-of-work estimation procedure was revised for 1986 and later years; hence, these data are not directly comparable with data for 1985 and earlier years. See technical notes for a more complete discussion of this change.

The 1992 gross domestic product (GDP) implicit price deflators were used to convert current dollars to constant dollars.

As a result of a new sample design, statistics for 1988-91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

Table A-22a. Funds for performance of basic research, applied research, and development, by industry and source of funds: 1994

Page 1 of 3

Industry	SIC code	Total			Basic Research			Applied Research			Development		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
[Dollars in millions]													
All Industries.....		\$119,595	\$22,463	\$97,131	\$7,017	\$939	\$6,078	\$23,490	\$4,119	\$19,372	\$89,088	\$17,405	\$71,683
Manufacturing.....		90,749	17,373	73,375	4,981	250	4,732	17,321	2,084	15,238	68,447	15,039	53,408
Food, kindred, and tobacco products.....	20,21	1,476	0	1,476	114	0	114	473	0	473	889	0	889
Textiles and apparel.....	22,23	(D)	(D)	316	(D)	(D)	42	(D)	(D)	47	(D)	(D)	228
Lumber, wood products, and furniture.....	24,25	(D)	(D)	201	(D)	(D)	27	(D)	(D)	43	(D)	(D)	131
Paper and allied products.....	26	(D)	(D)	1,263	(D)	(D)	211	(D)	(D)	619	433	0	433
Chemicals and allied products.....	28	(D)	(D)	16,559	2,608	9	2,599	(D)	(D)	5,386	9,186	610	8,575
Industrial chemicals.....	281-82,286	(D)	(D)	4,780	(D)	(D)	1,066	(D)	(D)	(D)	(D)	(D)	(D)
Drugs and medicines.....	283	9,633	8	9,625	(D)	1	(D)	3,333	5	3,328	(D)	2	(D)
Other chemicals.....	284-85,287-89	(D)	(D)	2,154	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Petroleum refining and extraction.....	13,29	1,950	10	1,939	(D)	0	(D)	694	5	688	(D)	5	(D)
Rubber products.....	30	(D)	(D)	1,432	33	0	33	(D)	(D)	215	1,184	0	1,184
Stone, clay, and glass products.....	32	591	38	553	50	0	50	212	37	175	329	1	328
Primary metals.....	33	690	17	672	(D)	(D)	102	(D)	(D)	206	(D)	(D)	364
Ferrous metals and products.....	331-32,3398-99	(D)	(D)	241	(D)	(D)	19	(D)	(D)	84	(D)	(D)	138
Nonferrous metals and products.....	333-36	(D)	(D)	431	83	0	83	(D)	(D)	122	(D)	(D)	226
Fabricated metal products.....	34	1,111	243	868	(D)	(D)	78	(D)	(D)	184	833	226	606
Machinery.....	35	8,110	99	8,011	261	7	254	1,464	35	1,429	6,385	56	6,328
Office, computing, and accounting machines.....	357	4,106	28	4,078	(D)	(D)	62	(D)	(D)	713	3,316	13	3,303
Other machinery, except electrical.....	351-56,358-59	4,004	71	3,933	(D)	(D)	192	(D)	(D)	716	3,068	43	3,025
Electrical equipment.....	36	15,338	1,801	13,537	(D)	(D)	388	(D)	(D)	2,597	12,203	1,653 (S)	10,550
Radio and TV receiving equipment.....	365	(D)	(D)	64	(D)	(D)	(D)	(D)	0	(D)	36	1	35
Communication equipment.....	366	(D)	(D)	4,939	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	4,111
Electronic components.....	367	6,032	162	5,870	(D)	(D)	121	(D)	(D)	1,370	4,529	150	4,379
Other electrical equipment.....	361-64,369	(D)	(D)	2,664	(D)	(D)	118	(D)	(D)	521	(D)	(D)	2,025

Table A-22a. Funds for performance of basic research, applied research, and development, by industry and source of funds: 1994

Page 2 of 3

Industry	SIC code	Total			Basic Research			Applied Research			Development			
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	
[Dollars in millions]														
Transportation equipment.....	37	\$28,087	\$10,392	\$17,695	\$244	\$109	\$136	\$2,044	\$784	(S)	\$1,259	\$25,799	\$9,499	\$16,300
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	11,950	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other transportation equipment.....	373-75,379	(D)	(D)	279	31	0	31	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Aircraft and missiles.....	372,376	14,260	8,794	5,466	(D)	(D)	(D)	(D)	(D)	(D)	12,787	7,978	4,809	
Professional and scientific instruments.....	38	11,441	3,384	8,058	(D)	(D)	467	2,086	299	1,787	(D)	(D)	5,803	
Scientific and mechanical measuring instruments.....	381-82	6,952	3,266	3,687	(D)	(D)	197	1,409	271	1,138	(D)	(D)	2,351	
Optical, surgical, photographic, and other instruments.....	384-87	4,489	118	4,371	(D)	(D)	270	677	28	649	(D)	(D)	3,452	
Other manufacturing industries.....	27,31,39	(D)	(D)	796	(D)	(D)	93	129	0	129	(D)	(D)	574	
Nonmanufacturing .....		28,846	5,090	23,756	2,036	689	1,346	6,169	2,035	4,134	20,641	2,366	(S)	18,275
Transportation and utilities.....	40-42,44-49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Communications.....	48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Telephone communications.....	481	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other communications.....	482-484,489	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Electric, gas, and sanitary services.....	49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other transportation and utilities.....	40-42,44-47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trade.....	50-59	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Finance, insurance, and real estate.....	60-65,67	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

See explanatory information and SOURCE at end of table.

Table A-22a. Funds for performance of basic research, applied research, and development, by industry and source of funds: 1994

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Industry	SIC code	Total			Basic Research			Applied Research			Development		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
[Dollars in millions]													
Services.....	701,72,73,75- 81,83,84,87,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Business services.....	73	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Computer and data processing services.....	737	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other business services.....	731-736,738	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Health services.....	80	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other health services.....	802-805, 808-809	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Engineering and management services.....	87	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Engineering, architectural, and surveying.....	871	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Research, development, and testing.....	873	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other engineering and management services.....	872,874	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other services.....	701,72,75-79, 81,83,84,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other nonmanufacturing industries .....	07-12,14,15, 161-162,17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

NA = Not available

NOTE: The character-of-work estimation procedure was revised for 1986 and later years; hence, these data are not directly comparable with data for 1985 and earlier years. See technical notes for a more complete discussion of this change.

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1994

Table A-23a. Funds for performance of basic research, applied research, and development, by industry and source of funds: 1995

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Industry	SIC code	Total			Basic Research			Applied Research			Development		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
[Dollars in millions]													
All Industries.....		\$132,103	\$23,451	\$108,652	\$6,099	\$720	\$5,379	\$27,454	\$3,699	\$23,755	\$98,552	\$19,031	\$79,516
Manufacturing.....		100,067	18,831	81,236	3,849	290	3,559	20,416	2,140	18,276	75,804	16,399	59,401
Food, kindred, and tobacco products.....	20,21	1,566	0	1,566	153	0	153	510	0	510	903	0	903
Textiles and apparel.....	22,23	(D)	(D)	381	29	0	29	(D)	(D)	49	(D)	(D)	303
Lumber, wood products, and furniture.....	24,25	(D)	(D)	229	21	0	21	38	0	38	(D)	(D)	169
Paper and allied products.....	26	(D)	(D)	1,404	245 (S)	0	245 (S)	(D)	(D)	720 (S)	439	0	439
Chemicals and allied products.....	28	17,547	210 (S)	17,337	(D)	(D)	1,616	(D)	(D)	5,666	10,241	187 (S)	10,055
Industrial chemicals.....	281-82,286	(D)	(D)	5,139	(D)	(D)	514	(D)	(D)	1,437	(D)	(D)	3,188
Drugs and medicines.....	283	10,215	14	10,202	1,018	2	1,016	3,513	5	3,508	5,683	7	5,677
Other chemicals.....	284-85, 287-89	(D)	(D)	1,996	(D)	(D)	86	(D)	(D)	720	(D)	(D)	1,190
Petroleum refining and extraction.....	13,29	1,760	6	1,754	115	0	115	(D)	(D)	719	(D)	(D)	920
Rubber products.....	30	(D)	(D)	1,210	67	0	67	(D)	(D)	229	(D)	(D)	915
Stone, clay, and glass products.....	32	448	6	441	17	0	17	(D)	(D)	151	(D)	(D)	273
Primary metals.....	33	593	13	580	47	0	47	(D)	(D)	184	(D)	(D)	349
Ferrous metals and products.....	331-32, 3398-99	(D)	(D)	217	14	0	14	85	0	85	(D)	(D)	118
Nonferrous metals and products.....	333-36	(D)	(D)	363	33	0	33	(D)	(D)	100	235	5	231
Fabricated metal products.....	34	1,023	86	937	(D)	(D)	68	156	13	143	(D)	(D)	726
Machinery.....	35	(D)	(D)	9,676	(D)	(D)	261	2,431	29	2,402	7,067	54	7,012
Office, computing, and accounting machines.....	357	(D)	(D)	4,699	(D)	(D)	24	(D)	(D)	1,323	(D)	(D)	3,352 (S)
Other machinery, except electrical.....	351-56, 358-59	5,041	64	4,976	(D)	(D)	238	(D)	(D)	1,079	(D)	(D)	3,660

See explanatory information and SOURCE at end of table.

Table A-23a. Funds for performance of basic research, applied research, and development, by industry and source of funds: 1995

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Industry	SIC code	Total			Basic Research			Applied Research			Development			
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	
[Dollars in millions]														
Electrical equipment.....	36	\$18,751	\$1,690	\$17,060	(D)	(D)	\$240	\$3,882	(D)	(D)	\$3,279	\$14,612	\$1,070	\$13,541
Radio and TV receiving equipment.....	365	(D)	(D)	114	\$5	\$0	5	16	\$0	16	(D)	(D)	94	
Communication equipment.....	366	(D)	(D)	3,845	56	0	56	(D)	(D)	664	3,644	519	3,125	
Electronic components.....	367	(D)	(D)	9,628	(D)	(D)	88	2,435	430	2,005	7,705	169	7,535	
Other electrical equipment.....	361-64,369	(D)	(D)	3,473	(D)	(D)	91	(D)	(D)	595	(D)	(D)	2,787	
Transportation equipment.....	37	32,441	13,130	19,311	348	250	98	2,791	705	2,086	29,302	12,175	17,127	
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	13,590	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	12,885	
Other transportation equipment.....	373-75,379	(D)	(D)	232	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	179	
Aircraft and missiles.....	372,376	16,951	11,462	5,489	252	250	2	1,987	564	1,423	14,712	10,648	4,064	
Professional and scientific instruments.....	38	11,976	3,460 (S)	8,516	(D)	(D)	499	(D)	(D)	2,015	8,812	2,810 (S)	6,002	
Scientific and mechanical measuring instruments.....	381-82	7,146	3,358 (S)	3,787	(D)	(D)	257	(D)	(D)	1,406	(D)	(D)	2,125	
Optical, surgical, photographic, and other instruments.....	384-87	4,831	102	4,729	(D)	(D)	242	634	24	610	(D)	(D)	3,877	
Other manufacturing industries.....	27,31,39	(D)	(D)	835	(D)	(D)	83	84	0	84	668	0	668	
Nonmanufacturing .....	32,036	4,620	27,415	2,250	430	1,820	7,038	1,558	5,480	22,748	2,632	20,115		
Transportation and utilities.....	40-42,44-49	5,435	252	5,183	(D)	(D)	116	(D)	(D)	953	4,359	245	4,114	
Communications.....	48	(D)	(D)	4,756	(D)	0	(D)	(D)	0	(D)	(D)	(D)	3,852	
Telephone communications.....	481	(D)	(D)	4,697	(D)	0	(D)	(D)	0	(D)	(D)	(D)	3,809	
Other communications.....	482-484,489	59	0	59	(D)	0	(D)	(D)	0	(D)	43	0	43	
Electric, gas, and sanitary services.....	49	440	93	347	(D)	(D)	48	(D)	(D)	105	280	86	194	
Other transportation and utilities.....	40-42,44-47	(D)	(D)	80	(D)	0	(D)	(D)	(D)	(D)	(D)	(D)	68	
Trade.....	50-59	(D)	(D)	7,514	(D)	(D)	211	(D)	(D)	1,236	(D)	(D)	6,067	
Finance, insurance, and real estate.....	60-65,67	(D)	(D)	710	(D)	(D)	115	(D)	(D)	17	(D)	(D)	578	

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See explanatory information and SOURCE at end of table.

Table A-23a. Funds for performance of basic research, applied research, and development, by industry and source of funds: 1995

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Industry	SIC code	Total			Basic Research			Applied Research			Development		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
[Dollars in millions]													
Services.....	701,72,73, 75-81,83, 84,87,89	\$17,876	\$4,270	\$13,606	\$1,766	\$420	\$1,346	\$4,658	\$1,537	\$3,122	\$11,452	\$2,312	\$9,138
Business services.....	73	9,293	612	8,681	(D)	(D)	(D)	(D)	(D)	(D)	6,972	276	6,695
Computer and data processing services.....	737	9,059	514	8,545	(D)	(D)	569	(D)	(D)	1,376	6,796	196	6,600
Other business services.....	731-736,738	234	98	136	(D)	(D)	(D)	(D)	(D)	(D)	175	80	95
Health services.....	80	756	4	753	(D)	(D)	(D)	237	2	235	(D)	(D)	(D)
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	(D)	(D)	737	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other health services.....	802-805, 808-809	(D)	(D)	16 (S)	1	(D)	(D)	(D)	(D)	(D)	7	0	7
Engineering and management services.....	87	7,662	3,650	4,011	(D)	(D)	(D)	(D)	(D)	(D)	3,887	2,034 (S)	1,852
Engineering, architectural, and surveying.....	871	2,933	1,883	1,050	(D)	(D)	(D)	(D)	(D)	(D)	1,519	1,079	440
Research, development, and testing.....	873	(D)	(D)	2,829	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	1,287
Other engineering and management services.....	872,874	(D)	(D)	132	(D)	(D)	7	(D)	(D)	0	(D)	(D)	125
Other services.....	701,72,75- 79,83, 84,89	165	4	160	(D)	(D)	(D)	29	3	26	(D)	(D)	(D)
Other nonmanufacturing industries .....	07-12,14,15, 161-162,17	413	11	402	32	0	32	(D)	(D)	153	(D)	(D)	217

KEY: (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

NOTE: The character-of-work estimation procedure was revised for 1986 and later years; hence, these data are not directly comparable with data for 1985 and earlier years. See technical notes for a more complete discussion of this change.

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table A-24a. Funds for performance of basic research, applied research, and development, by industry and source of funds: 1996

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Industry	SIC code	Total			Basic Research			Applied Research			Development		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
[Dollars in millions]													
All Industries.....		\$144,667	\$23,653	\$121,015	\$8,207	\$1,358	\$6,848	\$29,241	\$3,871	\$25,370	\$107,218	\$18,423 (S)	\$88,798
Manufacturing.....		111,864	20,020	91,845	(D)	(D)	4,851	(D)	(D)	19,711	83,661	16,379	67,284
Food, kindred, and tobacco products.....	20,21	1,564	0	1,564	100	0	100	508	0	508	957	0	957
Textiles and apparel.....	22,23	(D)	(D)	414	50	0	50	(D)	(D)	43	(D)	(D)	321
Lumber, wood products, and furniture.....	24,25	(D)	(D)	634	37	0	37	(D)	(D)	122	475	0	475
Paper and allied products....	26	(D)	(D)	1,534	313 (S)	0	313 (S)	(D)	(D)	706 (S)	(D)	(D)	515
Chemicals and allied products.....	28	(D)	(D)	17,520	1,628	8	1,620	(D)	(D)	5,667	(D)	(D)	10,233
Industrial chemicals.....	281-82,286	(D)	(D)	5,246	(D)	(D)	697	(D)	(D)	1,468	(D)	(D)	3,081
Drugs and medicines.....	283	9,773	3	9,769	(D)	(D)	856	(D)	(D)	3,157	5,758	2 (S)	5,755
Other chemicals.....	284-85, 287-89	2,505	0	2,505	67	0	67	1,041	0	1,041	1,396	0	1,396
Petroleum refining and extraction.....	13,29	1,654	24	1,630	(D)	(D)	(D)	592	2	590	(D)	(D)	(D)
Rubber products.....	30	(D)	(D)	1,269	(D)	(D)	67	(D)	(D)	251	(D)	(D)	951
Stone, clay, and glass products.....	32	468	5	463	(D)	(D)	21	(D)	(D)	162	(D)	(D)	280
Primary metals.....	33	(D)	(D)	637	(D)	(D)	(D)	(D)	(D)	167	754 (S)	(D)	(D)
Ferrous metals and products.....	331-32, 3398-99	(D)	(D)	214	6	(D)	(D)	(D)	0	(D)	(D)	(D)	(D)
Nonferrous metals and products.....	333-36	(D)	(D)	422	(D)	0	(D)	(D)	(D)	(D)	(D)	(D)	315
Fabricated metal products...	34	(D)	(D)	1,322	(D)	(D)	140	(D)	(D)	247	(D)	(D)	934
Machinery.....	35	13,455	117	13,338	(D)	(D)	397	(D)	(D)	2,409	10,605	73	10,532
Office, computing, and accounting machines.....	357	(D)	(D)	8,132	(D)	(D)	65	(D)	(D)	1,629	(D)	(D)	6,438
Other machinery, except electrical.....	351-56, 358-59	(D)	(D)	5,206	(D)	(D)	332	(D)	(D)	780	(D)	(D)	4,094

See explanatory information and SOURCE at end of table.

Table A-24a. Funds for performance of basic research, applied research, and development, by industry and source of funds: 1996

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Industry	SIC code	Total			Basic Research			Applied Research			Development		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
[Dollars in millions]													
Electrical equipment.....	36	\$22,498	\$2,143	\$20,356	(D)	(D)	\$531	(D)	(D)	\$4,926	\$15,662	\$764	\$14,898
Radio and TV receiving equipment.....	365	(D)	(D)	140	\$22	(D)	(D)	(D)	0	(D)	(D)	(D)	107
Communication equipment.....	366	(D)	(D)	4,359	(D)	(D)	18	(D)	(D)	751	3,999	410	3,590
Electronic components...	367	(D)	(D)	12,497	(D)	(D)	(D)	\$4,799	(D)	(D)	8,767	116	8,651
Other electrical equipment.....	361-64,369	(D)	(D)	3,360	(D)	(D)	228	(D)	(D)	582	(D)	(D)	2,550
Transportation equipment....	37	32,737	12,202	20,535	(D)	(D)	277	(D)	(D)	2,361	28,648	10,752 (S)	17,898
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	14,528	104	(D)	(D)	(D)	(D)	(D)	(D)	(D)	13,753
Other transportation equipment.....	373-75,379	(D)	(D)	298	(D)	\$0	(D)	167	(D)	(D)	(D)	(D)	149
Aircraft and missiles.....	372,376	16,224	10,515	5,710	(D)	(D)	(D)	(D)	(D)	(D)	13,259	9,264 (S)	3,995
Professional and scientific instruments.....	38	12,149	3,942	8,207	(D)	(D)	943	1,099	\$67	1,032	(D)	(D)	6,232
Scientific and mechanical measuring instruments.....	381-82	(D)	(D)	3,283	(D)	(D)	455	482	31	450	(D)	(D)	2,378
Optical, surgical, photographic, and other instruments.....	384-87	(D)	(D)	4,924	(D)	(D)	488	617	35	582	(D)	(D)	3,854
Other manufacturing industries 1/.....	27,31,39	(D)	(D)	2,423	(D)	(D)	247	973	455	518	1,738	80	1,658
Nonmanufacturing.....	32,803	3,633	29,170	(D)	(D)	1,997	(D)	(D)	5,659	23,557	2,044 (S)	21,514	
Transportation and utilities...	40-42,44-49	4,678	186	4,492	(D)	(D)	(D)	(D)	(D)	(D)	3,650	180	3,469
Communications.....	48	(D)	(D)	3,970	(D)	0	(D)	(D)	(D)	(D)	(D)	(D)	3,040
Telephone communications.....	481	(D)	(D)	3,897	(D)	0	(D)	(D)	(D)	(D)	(D)	(D)	2,982
Other communications....	482-484,489	73	0	73	(D)	0	(D)	16	(D)	(D)	(D)	(D)	57

See explanatory information and SOURCE at end of table.

Table A-24a. Funds for performance of basic research, applied research, and development, by industry and source of funds: 1996

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Industry	SIC code	Total			Basic Research			Applied Research			Development		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
[Dollars in millions]													
Electric, gas, and sanitary services.....	49	\$352	\$42	\$311	\$15	\$0	\$15	(D)	(D)	\$73	(D)	(D)	\$223
Other transportation and utilities.....	40-42,44-47	(D)	(D)	211	(D)	(D)	(D)	(D)	\$0	(D)	\$221	\$12	209
Trade.....	50-59	6,389	51 (S)	6,338	(D)	(D)	405	\$1,462	0	1,462	(D)	(D)	4,471
Finance, insurance, and real estate.....	60-65,67	(D)	(D)	1,280	12	(D)	(D)	(D)	0	(D)	1,177	2	1,174
Services.....	701,72,73, 75-81,83, 84,87,89	19,022	3,118	15,904	1,699	360	1,339	3,952	1,006 (S)	2,946	13,371	1,752 (S)	11,619
Business services.....	73	10,641	361	10,280	593	84	509	1,328	51	1,277	8,720	226	8,494
Computer and data processing services...	737	(D)	(D)	10,025	550	84	467	(D)	(D)	1,244	(D)	(D)	8,314
Other business services.....	731-736,738	(D)	(D)	255	41	0	41	(D)	(D)	33	(D)	(D)	181
Health services.....	80	(D)	(D)	735 (S)	(D)	(D)	50	(D)	(D)	252 (S)	(D)	(D)	433 (S)
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	715 (S)	3	713 (S)	48	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other health services.....	802-805, 808-809	(D)	(D)	23	(D)	0	(D)	12	(D)	(D)	(D)	0	(D)
Engineering and management services....	87	7,318	2,746	4,572	1,029	274	757	2,324	949 (S)	1,376	3,965	1,523 (S)	2,439
Engineering, architectural, and surveying.....	871	1,660	994	667	(D)	(D)	(D)	(D)	(D)	(D)	943	546	398

See explanatory information and SOURCE at end of table.

Table A-24a. Funds for performance of basic research, applied research, and development, by industry and source of funds: 1996

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Industry	SIC code	Total			Basic Research			Applied Research			Development		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
[Dollars in millions]													
Research, development, and testing.....	873	\$5,484	\$1,708 (S)	\$3,776	\$795	\$128	\$667	\$1,772	\$603 (S)	\$1,168	\$2,917	\$977 (S)	\$1,941
Other engineering and management services.....	872,874	173	45	129	(D)	(D)	(D)	(D)	(D)	(D)	101	1	101
Other services.....	701,72, 75-79,81, 83,84,89	(D)	(D)	317	(D)	(D)	25	(D)	(D)	(D)	(D)	(D)	250
Other nonmanufacturing industries 1/.....	07-12,14, 15,161-162, 17	(D)	(D)	1,156	46	0	46	547	218	329	(D)	(D)	781

1/ Beginning in 1996 manufacturing companies with fewer than 50 employees and nonmanufacturing companies with fewer than 15 employees were sampled separately without regard to industry classification to minimize year-to-year variation in survey estimates. Estimates for manufacturing companies in this group are combined with those for companies in "Other manufacturing industries."

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Estimates for nonmanufacturing companies in this group are combined with those for companies in "Other nonmanufacturing industries." As a result, statistics for "Other manufacturing industries" and for "Other nonmanufacturing industries" for 1996 are not comparable with statistics for prior years.

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

**NOTE:** The character-of-work estimation procedure was revised for 1986 and later years; hence, these data are not directly comparable with data for 1985 and earlier years. See technical notes for a more complete discussion of this change.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

Table A-25a. Number of companies conducting basic research and total number of R&amp;D-performing companies, by industry and size of company: 1996

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Industry	SIC code	Total		Size of company											
				Fewer than 500 employees		500 to 999 employees		1,000 to 4,999 employees		5,000 to 9,999 employees		10,000 to 24,999 employees		25,000 or more employees	
		Total	Basic	Total	Basic	Total	Basic	Total	Basic	Total	Basic	Total	Basic	Total	Basic
All Industries.....		34,569	8,211	31,519	7,520	1,132	278	1,324	282	292	49	175	50	127	33
Manufacturing.....		19,090	4,362	16,846	3,823	862	205	973	234	202	40	131	38	76	23
Food, kindred, and tobacco products.....	20,21	645	187	449	150	63	19	94	6	16	7	11	2	12	3
Textiles and apparel.....	22,23	451	106	317	70	65	17	51	15	9	2	8	1	1	1
Lumber, wood products, and furniture.....	24,25	429	27	356	3	23	11	33	10	11	1	4	1	2	0
Paper and allied products.....	26	197	24	107	1	11	7	57	9	6	1	10	3	6	3
Chemicals and allied products.....	28	618	117	430	52	52	19	89	25	22	9	17	8	8	4
Industrial chemicals.....	281-82,286	169	34	94	2	25	11	31	11	8	2	8	5	3	3
Drugs and medicines.....	283	100	18	58	2	6	2	22	7	5	3	6	3	3	1
Other chemicals.....	284-85,287-89	349	65	278	48	21	6	37	7	9	4	3	0	2	0
Petroleum refining and extraction.....	13,29	124	57	104	50	1	0	5	2	1	0	9	3	4	2
Rubber products.....	30	558	92	389	53	83	25	73	13	7	0	4	1	2	1
Stone, clay, and glass products.....	32	248	63	200	50	15	0	24	8	5	2	4	3	0	0
Primary metals.....	33	231	61	163	53	16	2	31	4	13	1	5	0	3	1
Ferrous metals and products.....	331-32,3398-99	137	57	102	50	3	2	21	4	9	1	2	0	1	0
Nonferrous metals and products.....	333-36	94	4	61	3	13	0	10	0	4	0	3	0	2	1
Fabricated metal products.....	34	1,005	251	823	196	91	35	68	16	10	1	11	3	1	0
Machinery.....	35	1,875	355	1,534	249	109	26	185	70	26	5	18	4	3	1
Office, computing, and accounting machines.....	357	151	9	114	2	12	0	12	3	7	2	5	1	1	1
Other machinery, except electrical.....	351-56,358-59	1,724	346	1,420	247	97	26	173	67	19	3	13	3	2	0
Electrical equipment.....	36	1,497	325	1,178	269	155	25	126	21	18	5	12	3	9	2
Radio and TV receiving equipment.....	365	51	5	42	4	5	0	3	1	1	0	0	0	0	0
Communication equipment.....	366	290	76	232	69	27	4	23	3	4	0	1	0	2	1
Electronic components.....	367	588	132	466	113	61	1	46	14	7	2	4	2	4	0
Other electrical equipment.....	361-64,369	569	111	437	83	62	20	54	3	6	3	7	1	3	1
Transportation equipment.....	37	346	66	204	50	52	0	25	5	40	3	10	4	16	4
Motor vehicles and motor vehicles equipment.....	371	179	7	100	0	51	0	9	1	8	1	7	4	4	1
Other transportation equipment.....	373-75,379	94	3	52	0	0	0	10	3	28	0	2	0	3	0
Aircraft and missiles.....	372,376	73	56	52	50	1	0	6	1	4	2	1	0	9	3

See explanatory information and SOURCE at end of table.

Table A-25a. Number of companies conducting basic research and total number of R&amp;D-performing companies, by industry and size of company: 1996

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Industry	SIC code	Total		Size of company											
				Fewer than 500 employees		500 to 999 employees		1,000 to 4,999 employees		5,000 to 9,999 employees		10,000 to 24,999 employees		25,000 or more employees	
		Total	Basic	Total	Basic	Total	Basic	Total	Basic	Total	Basic	Total	Basic	Total	Basic
Professional and scientific instruments.....	38	877	100	727	68	61	13	72	14	10	3	2	1	5	1
Scientific and mechanical measuring instruments.....	381-82	468	59	395	42	39	12	27	5	3	0	1	0	3	0
Optical, surgical, photographic, and other instruments.....	384-87	409	41	332	26	22	1	45	9	7	3	1	1	2	1
Other manufacturing industries 1/.....	27,31,39	9,990	2,531	9,865	2,508	65	7	41	15	9	0	6	1	4	0
Nonmanufacturing .....		15,479	3,849	14,674	3,697	270	73	351	48	90	9	44	12	51	10
Transportation and utilities.....	40-42,44-49	274	20	167	1	4	0	53	14	20	1	13	3	18	1
Communications.....	48	38	2	22	0	2	0	3	1	1	0	0	0	10	1
Telephone communications.....	481	11	1	0	0	0	0	0	0	1	0	0	0	10	1
Other communications.....	482-484,489	27	1	22	0	2	0	3	1	0	0	0	0	0	0
Electric, gas, and sanitary services.....	49	122	17	43	1	2	0	45	12	18	1	11	3	3	0
Other transportation and utilities.....	40-42,44-47	114	1	102	0	0	0	4	1	1	0	2	0	5	0
Trade.....	50-59	2,950	815	2,695	751	119	52	91	5	31	5	5	1	9	2
Finance, insurance, and real estate.....	60-65,67	308	56	210	53	3	2	73	0	10	0	2	0	10	1
Services.....	701,72,73, 75-81,83,84, 87,89	4,896	1,084	4,601	1,030	124	19	111	19	23	2	24	8	13	6
Business services.....	73	2,750	541	2,564	524	90	7	63	7	19	2	8	0	7	1
Computer and data processing services.....	737	2,366	447	2,217	435	81	5	52	6	8	2	6	0	2	0
Other business services.....	731-736,738	384	94	347	90	8	2	11	1	11	0	2	0	5	1
Health services.....	80	351	87	337	83	4	2	6	0	1	0	3	2	0	0
Offices and clinics of medical doctors, hospitals, medical and dental labs....	801,806,807	317	59	307	55	3	2	4	0	0	0	3	2	0	0
Other health services.....	802-805, 808-809	34	28	30	28	1	0	2	0	1	0	0	0	0	0

See explanatory information and SOURCE at end of table.

Table A-25a. Number of companies conducting basic research and total number of R&amp;D-performing companies, by industry and size of company: 1996

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Industry	SIC code	Total		Size of company											
				Fewer than 500 employees		500 to 999 employees		1,000 to 4,999 employees		5,000 to 9,999 employees		10,000 to 24,999 employees		25,000 or more employees	
		Total	Basic	Total	Basic	Total	Basic	Total	Basic	Total	Basic	Total	Basic	Total	Basic
Engineering and management services.....	87	1,413	346	1,342	321	27	8	33	12	1	0	5	0	5	4
Engineering, architectural, and surveying.....	871	593	108	557	101	11	0	21	7	1	0	3	0	0	0
Research, development, and testing.....	873	661	212	639	201	12	7	4	0	0	0	1	0	5	4
Other engineering and management services.....	872,874	159	26	145	20	4	1	8	5	0	0	1	0	0	0
Other services.....	701,72,75-79, 81,83,84,89	382	110	359	102	3	2	9	0	2	0	8	6	1	1
Other nonmanufacturing industries 1/.....	07-12,14,15, 161-162,17	7,051	1,874	7,000	1,862	19	1	23	10	6	1	1	0	1	0

1/ Beginning in 1996 manufacturing companies with fewer than 50 employees and nonmanufacturing companies with fewer than 15 employees were sampled separately without regard to industry classification to minimize year-to-year variation in survey estimates. Estimates for manufacturing companies in this group are combined with those for companies in "Other manufacturing industries." Estimates for nonmanufacturing companies in this group are combined with those for companies in "Other nonmanufacturing industries." As a result, statistics for "Other manufacturing industries" and for "Other nonmanufacturing industries" for 1996 are not comparable with statistics for prior years.

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

Table A-26a. Number of full-time-equivalent (FTE) R&amp;D scientists and engineers in R&amp;D-performing companies, by industry and size of company: 1986-97

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Industry and size of company	SIC code	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	
		[In thousands]											
Total (January).....		671.0	695.8	708.6	722.5	743.6	773.4	779.3	764.7	768.5	746.1	832.8	885.7
Total (Annual average).....		683.4	702.2	715.6	733.0	758.5	776.4	772.0	766.6	758.8	789.4	859.3	NA
All Industries.....		671.0	695.8	708.6	722.5	743.6	773.4	779.3	764.7	768.5	746.1	832.8	885.7
Distribution by industry:													
Manufacturing.....		595.9	599.4	606.7	597.3	NA	NA	576.7	568.2	571.1	547.2	606.2	639.9
Food, kindred, and tobacco products.....	20,21	(S)	(S)	(S)	(S)	9.4	9.8	9.6	10.3	8.9	9.8	9.8	10.4
Textiles and apparel.....	22,23	2.6	2.4	2.4	2.5	2.8	(S)	2.8	3.1	3.3	2.9	3.8	3.7
Lumber, wood products, and furniture.....	24,25	(S)	1.3	1.3	1.4	(S)	(S)	1.5	1.6	3.3	2.3	2.9	3.4
Paper and allied products.....	26	6.4	6.0	6.1	6.4	8.5	(S)	10.7	10.6	10.6	10.6	11.0 (S)	11.2 (S)
Chemicals and allied products.....	28	75.8	75.2	75.8	78.3	80.4	81.6	85.6	86.5	93.1	99.6	94.3	89.0
Industrial chemicals.....	281-82,286	24.9	(S)	(S)	(S)	(S)	29.9	26.4	28.8	33.7	28.4	31.2	
Drugs and medicines.....	283	31.8	32.6	33.0	34.4	34.3	35.4	38.7	42.3	48.5	50.3	49.0	43.1
Other chemicals.....	284-85,287-89	19.1	20.2	20.3	18.8	18.9	17.0	17.0	17.8	15.8	15.6	16.9	14.8
242 Petroleum refining and extraction.....	13,29	10.4	9.9	9.5	10.7	11.1	11.4	11.5	11.0	9.7	8.4	8.4	9.0
Rubber products.....	30	(S)	(S)	(S)	(S)	(S)	(S)	14.8	13.0	9.0	9.8	10.2	9.9
Stone, clay, and glass products.....	32	7.5	8.6	8.6	7.6	7.0	6.0	5.3	5.1	4.0	4.3	3.9	3.7
Primary metals.....	33	5.7	5.5	5.6	5.5	5.2	4.6	5.1	4.6	5.1	6.5	4.1	5.5 (S)
Ferrous metals and products.....	331-32, 3398-99	2.5	(S)	2.3	2.3	(S)	(S)	1.7	1.6	2.6	1.9	1.6	1.6
Nonferrous metals and products.....	333-36	3.2	3.4	3.3	3.3	3.3	3.0	(S)	(S)	2.5	4.6	2.5	3.9 (S)
Fabricated metal products.....	34	(S)	9.9	10.5	9.9	10.1	(S)	8.7	7.9	10.2	9.2	9.1	10.0
Machinery.....	35	89.7	95.8	98.4	100.4	113.3	109.7	99.3	97.4	70.4	68.6	87.3	88.7
Office, computing, and accounting machines.....	357	71.9	73.4	74.4	75.0	84.7	77.6	67.1	65.8	34.6	31.8	33.7	45.3
Other machinery, except electrical.....	351-56,358-59	17.8	22.4	24.0	25.4	28.6	32.1	32.2	31.6	35.8	36.8	53.6	43.4
Electrical equipment.....	36	117.9	130.4	132.5	122.5	105.2	95.9	91.9	89.2	96.5	103.3	125.8	135.9
Radio and TV receiving equipment.....	365	1.8	1.2	1.3	1.5	0.8	1.0	1.0	1.0	0.8	0.9	1.3	1.6
Communication equipment.....	366	65.0	71.9	73.1	58.0	47.1	35.8	31.2	(S)	36.0 (S)	41.7 (S)	34.7 (S)	37.6 (S)
Electronic components.....	367	(S)	43.7	44.3	42.8	(S)	32.6	28.4	28.9	40.1	40.8	64.6 (S)	75.3 (S)
Other electrical equipment.....	361-64,369	16.5	13.6	(S)	(S)	21.3	(S)	31.2	28.8	19.6	20.0	25.3	21.4

See explanatory information and SOURCE at end of table.

Table A-26a. Number of full-time-equivalent (FTE) R&amp;D scientists and engineers in R&amp;D-performing companies, by industry and size of company: 1986-97

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1997

Industry and size of company	SIC code	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	
		[In thousands]											
Distribution by industry:													
Transportation equipment.....	37	179.2	187.3	188.2	185.4	170.2	149.7	141.1	147.5	129.6	120.8	156.6	161.8 (S)
Motor vehicles and motor vehicles equipment.....	371	33.9	46.5	47.3	45.8	49.4	45.3	44.5	45.1	51.0	51.1	57.0	63.8
Other transportation equipment.....	373-75,379	(S)	(S)	(S)	(S)	(S)	(S)	(S)	5.8 (S)	6.2	4.0	3.4	
Aircraft and missiles.....	372,376	144.8	136.3	136.4	134.8	115.3	100.2	92.9	97.9	72.8	63.5	95.5	94.6 (S)
Professional and scientific instruments.....	38	(S)	(S)	(S)	(S)	(S)	(S)	(S)	100.6 (S)	84.4	70.9 (S)	64.3 (S)	
Scientific and mechanical measuring instruments.....	381-82	(S)	(S)	(S)	(S)	(S)	(S)	(S)	66.4 (S)	63.2	48.2 (S)	42.6 (S)	
Optical, surgical, photographic, and other instruments.....	384-87	24.0	24.6	24.9	14.5	8.1	(S)	(S)	20.8	34.2	21.2	22.7	21.7
Other manufacturing industries 1/.....	27,31,39	(S)	6.3	6.4	5.4	5.6	(S)	6.0	5.8	15.5	7.5	8.2	33.4
Nonmanufacturing 2/.....		75.1	96.4	101.9	125.2	(S)	(S)	202.6	196.5	197.4	198.9	226.6	245.8
Transportation and utilities.....	40-42,44-49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	29.3	29.4
Communications.....	48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	25.4	24.7
Telephone communications.....	481	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	24.7	23.9
Other communications.....	482-484,489	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.8	0.8
Electric, gas, and sanitary services.....	49	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.2 (S)	4.0 (S)
Other transportation and utilities.....	40-42,44-47	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.7	0.8
Trade.....	50-59	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	47.5	39.6
Finance, insurance, and real estate.....	60-65,67	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.6	15.9
Services.....	701,72,73, 75-81,83,84, 87,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	139.6	143.9
Business services.....	73	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	80.2	87.8
Computer and data processing services.....	737	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	77.3	85.1
Other business services.....	731-736,738	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	3.0	2.8

See explanatory information and SOURCE at end of table.

Table A-26a. Number of full-time-equivalent (FTE) R&amp;D scientists and engineers in R&amp;D-performing companies, by industry and size of company: 1986-97

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Industry and size of company	SIC code	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	Projected 1997	
		[In thousands]												
Distribution by industry:														
Health services.....	80	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5.0	6.6	
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.4	6.3	
Other health services.....	802-805, 808-809	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.6	0.3 (S)	
Engineering and management services.....	87	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	52.9	45.3	
Engineering, architectural, and surveying.....	871	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	22.8 (S)	18.0	
Research, development, and testing.....	873	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	28.8	24.9	
Other engineering and management services.....	872,874	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.4	2.3 (S)	
Other services.....	701,72,75-79, 81,83,84,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1.5	4.2	
Other nonmanufacturing industries 1/.....	07-12,14,15, 161-162,17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4.6	17.0	

See explanatory information and SOURCE at end of table.

Table A-26a. Number of full-time-equivalent (FTE) R&amp;D scientists and engineers in R&amp;D-performing companies, by industry and size of company: 1986-97

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Industry and size of company	SIC code	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	
		[In thousands]											
Distribution by size of company: [Number of employees]													
Total.....		671.0	695.8	708.6	722.5	743.6	773.4	779.3	764.7	768.5	746.1	832.8	885.7
Fewer than 500.....		(S)	105.2	109.0	105.4	(S)	(S)	142.1	125.1	148.6	139.8	165.1	177.3
500 to 999.....		(S)	18.4	19.3	18.0	18.6	18.6	46.2	46.1	27.9	29.7	36.6	37.7
1,000 to 4,999.....		66.7	76.4	81.9	76.1	75.4	79.3	94.2	99.3	108.9	110.8	124.4	131.6
5,000 to 9,999.....		38.9	40.5	40.2	47.3	57.2	55.1	57.6	56.4	60.3	52.8	61.1	82.2
10,000 to 24,999.....		88.4	92.0	94.5	87.0	73.9	90.3	99.9	102.6	90.6	91.8	97.0	104.9
25,000 or more.....		365.3	363.3	363.7	388.7	404.2	408.4	339.2	335.2	332.1	321.2	348.6	351.9 (S)

1/ Beginning in 1996 manufacturing companies with fewer than 50 employees and nonmanufacturing companies with fewer than 15 employees were sampled separately without regard to industry classification to minimize year-to-year variation in survey estimates. Estimates for manufacturing companies in this group are combined with those for companies in "Other manufacturing industries." Estimates for nonmanufacturing companies in this group are combined with those for companies in "Other nonmanufacturing industries." As a result, statistics for "Other manufacturing industries" and for "Other nonmanufacturing industries" for 1996 are not comparable with statistics for prior years.

2/ Until 1995, data were not broken down below this level of detail for most nonmanufacturing industries.

**KEY:** (S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.  
NA = Not available

**NOTE:** As a result of a new sample design, statistics for 1988-91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

Table A-27a. Cost per R&amp;D scientist or engineer in R&amp;D-performing companies, by industry and size of company: 1986-96

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Industry and size of company	SIC code	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
		[Cost in dollars]										
All Industries.....		\$128,500	\$128,800	\$132,300	\$134,500	\$141,300	\$148,600	\$157,912	\$153,336	\$157,601	\$167,339	\$168,362
Distribution by industry:												
Manufacturing.....		NA	NA	NA	NA	NA	NA	NA	NA	NA	173,523	179,538
Food, kindred, and tobacco products.....	20,21	(D)	(S)	(D)	(D)	(D)	130,000	144,215	135,261	153,609	167,017	154,853
Textiles and apparel.....	22,23	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Lumber, wood products, and furniture.....	24,25	(S)	(S)	(D)	(S)	(S)	(D)	(D)	(D)	(D)	(D)	(D)
Paper and allied products.....	26	(D)	(D)	(D)	(S)	(S)	(D)	(D)	(D)	(D)	(D)	(D)
Chemicals and allied products.....	28	117,100	125,000	139,400	149,000	159,000	167,600	183,508	(D)	(D)	180,971	(D)
Industrial chemicals.....	281-82,286	150,200	(S)	(S)	(S)	(S)	181,000	193,871	(D)	(D)	(D)	(D)
Drugs and medicines.....	283	113,600	(D)	142,800	(D)	(D)	(D)	196,631	202607	195,145	205,637	212,185
Other chemicals.....	284-85, 287-89	83,100	(D)	105,600	(D)	(D)	(D)	135,423	(D)	(D)	(D)	158,355
Petroleum refining and extraction.....	13,29	(D)	187,400	182,700	194,000	201,800	217,000	205,318	208,360	209,439	209,495	189,981
Rubber products.....	30	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Stone, clay, and glass products.....	32	118,000	122,500	(D)	(D)	(D)	(D)	(D)	137,990	141,842	110,172	124,685
Primary metals.....	33	(D)	131,500	118,600	(S)	(D)	142,200	114,057	138,552	116,556	111,743	(D)
Ferrous metals and products.....	331-32, 3398-99	(D)	(D)	(S)	(D)	(D)	(D)	(D)	138,851	(D)	(D)	(D)
Nonferrous metals and products.....	333-36	138,800	(D)	(S)	(D)	(D)	(D)	(D)	138,326 (S)	(D)	(D)	(D)
Fabricated metal products.....	34	(S)	76,600	88,100	(S)	(S)	115,500	123,828	129,131	113,168	112,010	(D)
Machinery.....	35	(D)	(D)	(D)	130,000	138,500	147,800	152,797	100,631	118,717	(D)	152,894
Office, computing, and accounting machines.....	357	(D)	(D)	(D)	(D)	(D)	(D)	(D)	99,564	126,476	(D)	(D)
Other machinery, except electrical.....	351-56, 358-59	119,200	98,300	99,400	(D)	(D)	(D)	(D)	102,213	111,691	111,421	(D)

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See explanatory information and SOURCE at end of table.

Table A-27a. Cost per R&amp;D scientist or engineer in R&amp;D-performing companies, by industry and size of company: 1986-96

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Industry and size of company	SIC code	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	
		[Cost in dollars]											
Distribution by industry:													
Electrical equipment.....	36	\$120,700	\$124,300	\$124,100	\$132,400	\$142,800	\$147,100	\$150,118	\$144,725	\$151,872	\$163,626	\$171,907	
Radio and TV receiving equipment.....	365	88,700	97,900	124,200	103,400	113,200	(D)	(D)	(D)	(D)	(D)	(D)	
Communication equipment.....	366	141,300	155,300	160,300	170,600	177,100	(S)	(D)	(D)	(D)	(D)	(D)	
Electronic components.....	367	(D)	98,400	(S)	(S)	128,400	(D)	127,801	154,366	148,761	(D)	(D)	
Other electrical equipment.....	361-64,369	(D)	(S)	68,500	(S)	(S)	(D)	(D)	(D)	(D)	(D)	(D)	
Transportation equipment.....	37	170,700	183,400	195,600	211,700	215,700	189,400	191,274	196,777	228,881	233,968	205,665 (S)	
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	
Other transportation equipment.....	373-75,379	(S)	(S)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	
Aircraft and missiles.....	372,376	149,800	180,400	193,300	207,300	213,700	177,000	180,552	176,450	217,219	213,328	170,733 (S)	
Professional and scientific instruments.....	38	(S)	(S)	(S)	(S)	(S)	(S)	(S)	115,180 (S)	119,693 (S)	154,251	179,723 (S)	
Scientific and mechanical measuring instruments.....	381-82	(D)	(D)	(S)	(S)	(S)	(S)	(S)	94,036 (S)	102,570 (S)	128,237	(D)	
Optical, surgical, photographic, and other instruments.....	384-87	(D)	(D)	316,700	(S)	(S)	(S)	(S)	161,721	161,435	220,383	(D)	
Other manufacturing industries 1/.....	27,31,39	(S)	(D)	(D)	(D)	(D)							
Nonmanufacturing 2/.....		86,800	69,100	74,900	(S)	(S)	137,400	152,411	159,188	142,125	150,578	138,882	
Transportation and utilities.....	40-42,44-49	NA	NA	NA	NA	NA	NA	NA	NA	NA	370,933	159,442	
Communications.....	48	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)	
Telephone communications.....	481	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)	
Other communications.....	482-484,489	NA	NA	NA	NA	NA	NA	NA	NA	NA	157,435	94,495	

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See explanatory information and SOURCE at end of table.

Table A-27a. Cost per R&amp;D scientist or engineer in R&amp;D-performing companies, by industry and size of company: 1986-96

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Industry and size of company	SIC code	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	
		[Cost in dollars]											
Distribution by industry:													
Electric, gas, and sanitary services.....	49	NA	NA	NA	NA	NA	NA	NA	NA	NA	\$274,704 (S)	\$98,427 (S)	
Other transportation and utilities.....	40-42,44-47	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)	
Trade.....	50-59	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	146,774	
Finance, insurance, and real estate.....	60-65,67	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)	
Services.....	701,72,73, 75-81,83,84, 87,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	256,085	134,175	
Business services.....	73	NA	NA	NA	NA	NA	NA	NA	NA	NA	231,680	126,625	
Computer and data processing services.....	737	NA	NA	NA	NA	NA	NA	NA	NA	NA	234,483	(D)	
Other business services.....	731-736,738	NA	NA	NA	NA	NA	NA	NA	NA	NA	158,453	(D)	
Health services.....	80	NA	NA	NA	NA	NA	NA	NA	NA	NA	305,132	(D)	
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	133,871 (S)	
Other health services.....	802-805, 808-809	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	(D)	
Engineering and management services.....	87	NA	NA	NA	NA	NA	NA	NA	NA	NA	289,459	149,040	
Engineering, architectural, and surveying.....	871	NA	NA	NA	NA	NA	NA	NA	NA	NA	257,067 (S)	81,271 (S)	
Research, development, and testing.....	873	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	204,445	
Other engineering and management services.....	872,874	NA	NA	NA	NA	NA	NA	NA	NA	NA	(D)	93,929 (S)	

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See explanatory information and SOURCE at end of table.

Table A-27a. Cost per R&amp;D scientist or engineer in R&amp;D-performing companies, by industry and size of company: 1986-96

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Industry and size of company	SIC code	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	
		[Cost in dollars]											
Distribution by industry:													
Other services.....	701,72, 75-79,81, 83,84,89	NA	NA	NA	NA	NA	NA	NA	NA	NA	\$221,147	(D)	
Other nonmanufacturing industries 1/.....	07-12,14,15, 161-162,17	NA	NA	NA	NA	NA	NA	NA	NA	NA	179,020	(D)	
Distribution by size of company: [Number of employees]													
Total.....		\$128,500	\$128,800	\$132,300	\$134,500	\$141,300	\$148,600	\$157,912	\$153,336	\$157,601	167,339	\$168,362	
Fewer than 500.....		70,600	66,800	67,100	66,200	(S)	103,400	111,358	106,888	85,793	109,319	118,280	
500 to 999.....		103,400	92,600	(S)	98,200	(S)	178,700	176,585	87,233	138,366	141,660	124,765	
1,000 to 4,999.....		106,400	91,900	100,600	101,900	91,400	119,400	127,135	128,565	139,693	144,213	142,747	
5,000 to 9,999.....		108,400	102,900	100,400	102,500	110,800	150,800	148,285	156,899	152,227	167,284	161,035	
10,000 to 24,999.....		122,300	132,700	143,000	127,300	135,300	167,300	156,190	160,229	182,243	180,849	199,722	
25,000 or more.....		154,300	157,700	160,700	168,200	193,700	180,100	182,839	184,804	195,890	200,606	199,286 (S)	

249 1/ Beginning in 1996 manufacturing companies with fewer than 50 employees and nonmanufacturing companies with fewer than 15 employees were sampled separately without regard to industry classification to minimize year-to-year variation in survey estimates. Estimates for manufacturing companies in this group are combined with those for companies in "Other manufacturing industries." Estimates for nonmanufacturing companies in this group are combined with those for companies in "Other nonmanufacturing industries." As a result, statistics for "Other manufacturing industries" and for "Other nonmanufacturing industries" for 1996 are not comparable with statistics for prior years.

2/ Until 1995, data were not broken down below this level of detail for most nonmanufacturing industries.

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.

NA = Not available.

**NOTES:** The number of full-time-equivalent R&D scientists and engineers used to estimate the cost per R&D scientist or engineer is the arithmetic mean of the numbers of R&D scientists and engineers reported for January in two consecutive years. This number is then divided into the total R&D expenditures of the earlier years, and the ratio is attributed to the earlier year.

As a result of a new sample design, statistics for 1988-91 have been revised since originally published. These statistics now better reflect R&D performance among firms in the nonmanufacturing industries and small firms in all industries. As a result of the new sample design, statistics for 1991 and later years are not directly comparable with statistics for 1990 and earlier years. See the technical notes for more information.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

Table A-28a. Cost per R&amp;D scientist or engineer in R&amp;D-performing companies, by industry and size of company: 1996

Page 1 of 3

Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[Cost in dollars]					
All Industries.....		\$168,362	\$118,280	\$124,765	\$142,747	\$161,035	\$199,722	\$199,286 (S)
Manufacturing.....		179,538	100,356	120,849	151,400	171,027	207,460	208,384 (S)
Food, kindred, and tobacco products.....	20,21	154,853	43,326	99,214	121,688	152,799 (S)	214,611	211,539
Textiles and apparel.....	22,23	(D)	79,239	130,295	116,198	160,804	116,930 (S)	(D)
Lumber, wood products, and furniture.....	24,25	(D)	85,110	84,086	51,336	74,733 (S)	(D)	(D)
Paper and allied products.....	26	(D)	70,554	154,889	187,840	274,760	174,944 (S)	(D)
Chemicals and allied products.....	28	(D)	75,033	134,247	180,490	277,036	(D)	189,060
Industrial chemicals.....	281-82,286	(D)	125,558	151,973	215,790	211,603	220,758	(D)
Drugs and medicines.....	283	212,185	85,362	126,020	177,742	438,744	214,247	192,276
Other chemicals.....	284-85,287-89	158,355	50,024	109,505	135,800	124,984 (S)	(D)	(D)
Petroleum refining and extraction.....	13,29	189,981	227,572	(D)	145,993	(D)	173,971	206,783 (S)
Rubber products.....	30	(D)	81,471	111,683	152,177	180,618 (S)	162,649 (S)	(D)
Stone, clay, and glass products.....	32	124,685	31,908	109,094	105,245	182,036 (S)	158,894	0
Primary metals.....	33	(D)	101,648	71,770	114,503 (S)	199,905	(D)	(D)
Ferrous metals and products.....	331-32,3398-99	(D)	111,595	(D)	100,756 (S)	(D)	(D)	(D)
Nonferrous metals and products.....	333-36	(D)	96,414	(D)	132,050 (S)	(D)	(D)	(D)
Fabricated metal products.....	34	(D)	64,880	102,584	107,276	100,059	175,557	(D)
Machinery.....	35	152,894	69,659 (S)	115,617	112,147	114,602	(D)	(D)
Office, computing, and accounting machines.....	357	(D)	138,243	135,523 (S)	99,338	141,952	(D)	(D)
Other machinery, except electrical.....	351-56,358-59	(D)	55,407 (S)	106,581	120,708	92,081 (S)	240,771	(D)
Electrical equipment.....	36	171,907	121,229	108,362	168,418	184,663	148,699 (S)	200,604 (S)
Radio and TV receiving equipment.....	365	(D)	88,302	128,679 (S)	(D)	(D)	0	0
Communication equipment.....	366	(D)	123,728	78,397	137,796	(D)	(D)	(D)
Electronic components.....	367	(D)	124,239	122,025	219,327	216,712	(D)	(D)
Other electrical equipment.....	361-64,369	(D)	116,406	138,867	(D)	155,522	147,076	(D)
Transportation equipment.....	37	205,665 (S)	66,491	255,441 (S)	109,137	154,870 (S)	116,967	212,829 (S)
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	(D)	107,376	(D)	220,208	(D)
Other transportation equipment.....	373-75,379	(D)	(D)	(D)	149,929	(D)	(D)	(D)
Aircraft and missiles.....	372,376	170,733 (S)	(D)	(D)	89,345	199,764 (S)	(D)	172,212 (S)

See explanatory information and SOURCE at end of table.

Table A-28a. Cost per R&amp;D scientist or engineer in R&amp;D-performing companies, by industry and size of company: 1996

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Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[Cost in dollars]					
Professional and scientific instruments.....	38	\$179,723 (S)	\$82,628	\$137,706	\$174,039	\$251,413	(D)	(D)
Scientific and mechanical measuring instruments.....	381-82	(D)	77,407	159,941	151,566	(D)	(D)	\$173,679 (S)
Optical, surgical, photographic, and other instruments.....	384-87	(D)	93,307	96,153	201,782	(D)	(D)	(D)
Other manufacturing industries 1/.....	27,31,39	(D)	155,694	(D)	105,502	(D)	\$130,475 (S)	74,256
Nonmanufacturing.....		138,882	134,237	131,883	122,551	132,456	170,444	149,786
Transportation and utilities.....	40-42,44-49	159,442	231,511	(D)	94,975	(D)	83,641 (S)	168,894
Communications.....	48	(D)	66,521	(D)	(D)	(D)	0	167,954
Telephone communications.....	481	(D)	(D)	0	(D)	(D)	0	167,954
Other communications.....	482-484,489	94,495	67,972	(D)	(D)	0	0	0
Electric, gas, and sanitary services.....	49	98,427 (S)	(D)	(D)	107,985	(D)	(D)	(D)
Other transportation and utilities.....	40-42,44-47	(D)	(D)	0	(D)	(D)	(D)	(D)
Trade.....	50-59	146,774	156,067	199,631	140,785	191,388	(D)	(D)
Finance, insurance, and real estate.....	60-65,67	(D)	123,714	(D)	(D)	(D)	(D)	100,562
Services.....	701,72,73,75-81, 83,84,87,89	134,175	126,713	135,898	(D)	131,521	176,692	(D)
Business services.....	73	126,625	101,471	124,171	124,642	131,221	(D)	(D)
Computer and data processing services.....	737	(D)	104,466	122,734	124,537	(D)	(D)	(D)
Other business services.....	731-736,738	(D)	52,945	191,554 (S)	129,831	(D)	(D)	158,579
Health services.....	80	(D)	27,385	(D)	108,267 (S)	(D)	(D)	(D)
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	133,871 (S)	27,354	(D)	(D)	0	(D)	(D)
Other health services.....	802-805,808-809	(D)	27,842	(D)	(D)	(D)	0	0
Engineering and management services.....	87	149,040	169,309	191,725	63,489	(D)	(D)	(D)
Engineering, architectural, and surveying.....	871	81,271 (S)	118,590	80,024	75,470	(D)	(D)	(D)
Research, development, and testing.....	873	204,445	197,925	242,928	(D)	0	(D)	(D)
Other engineering and management services.....	872,874	93,929 (S)	100,884	(D)	(D)	(D)	(D)	0

See explanatory information and SOURCE at end of table.

Table A-28a. Cost per R&amp;D scientist or engineer in R&amp;D-performing companies, by industry and size of company: 1996

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Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[Cost in dollars]					
Other services.....	701,72,75–79,81, 83,84,89	(D)	\$30,504	(D)	(D)	(D)	(D)	(D)
Other nonmanufacturing industries 1/.....	07–12,14,15, 161–162, 17	(D)	152,016	\$23,278	\$134,395	\$159,513	(D)	(D)

1/ Beginning in 1996 manufacturing companies with fewer than 50 employees and nonmanufacturing companies with fewer than 15 employees were sampled separately without regard to industry classification to minimize year-to-year variation in survey estimates. Estimates for manufacturing companies in this group are combined with those for companies in "Other manufacturing industries." Estimates for nonmanufacturing companies in this group are combined with those for companies in "Other nonmanufacturing industries." As a result, statistics for "Other manufacturing industries" and for "Other nonmanufacturing industries" for 1996 are not comparable with statistics for prior years.

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent. For years prior to 1993, data have been withheld.

**NOTES:** The number of full-time-equivalent R&D scientists and engineers used to estimate the cost per R&D scientist or engineer is the arithmetic mean of the numbers of R&D scientists and engineers reported for January in two consecutive years. This number is then divided into the total R&D expenditures of the earlier years, and the ratio is attributed to the earlier year.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

Table A-29a. Domestic employment of R&amp;D-performing companies, by industry and size of company: 1995–96

Page 1 of 5

Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[In thousands]					
1995								
All Industries.....		17,759	1,935	835	2,735	1,916	2,649	7,689
Manufacturing.....		11,220	1,279	570	2,121	1,250	1,994	4,008
Food, kindred, and tobacco products.....	20,21	1,017	66	29	196	84	182	459
Textiles and apparel.....	22,23	387	27	30	96	(D)	141	(D)
Lumber, wood products, and furniture.....	24,25	234	39	23	76	47	(D)	(D)
Paper and allied products.....	26	547	14	11	89	50	146	237
Chemicals and allied products.....	28	1,211	109	45	207	283	288	278
Industrial chemicals.....	281-82,286	424	25	27	74	35	136	127
Drugs and medicines.....	283	348	21	7	64	22	(D)	(D)
Other chemicals.....	284-85,287-89	439	64	10	70	227	(D)	(D)
Petroleum refining and extraction.....	13,29	324	7	(D)	33	(D)	142	127
Rubber products.....	30	485	127	53	124	52	(D)	(D)
Stone, clay, and glass products.....	32	173	25	18	52	19	58	0
Primary metals.....	33	465	22	24	133	104	77	104
Ferrous metals and products.....	331-32,3398-99	264	6	8	86	(D)	(D)	(D)
Nonferrous metals and products.....	333-36	200	16	16	47	(D)	(D)	(D)
Fabricated metal products.....	34	593	139	49	137	57	212	0
Machinery.....	35	1,172	224	95	306	157	200	191
Office, computing, and accounting machines.....	357	195	23	11	59	44	(D)	(D)
Other machinery, except electrical.....	351-56,358-59	977	201	85	246	113	(D)	(D)
Electrical equipment.....	36	1,384	178	80	274	101	173	579
Radio and TV receiving equipment.....	365	23	6	2	15	0	0	0
Communication equipment.....	366	236	47	21	55	(D)	(D)	(D)
Electronic components.....	367	454	58	30	108	(D)	(D)	(D)
Other electrical equipment.....	361-64,369	671	66	26	96	41	91	350
Transportation equipment.....	37	2,009	65	30	145	103	136	1,530
Motor vehicles and motor vehicles equipment.....	371	1,069	55	25	105	64	(D)	(D)
Other transportation equipment.....	373-75,379	153	(D)	3 (S)	19	0	55	(D)
Aircraft and missiles.....	372,376	786	(D)	2	21	38	(D)	700

Table A-29a. Domestic employment of R&amp;D-performing companies, by industry and size of company: 1995–96

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Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[In thousands]					
1995								
Professional and scientific instruments.....	38	710	163	(D)	149	63	(D)	246
Scientific and mechanical measuring instruments.....	381-82	358	91	(D)	54	18	(D)	(D)
Optical, surgical, photographic, and other instruments.....	384-87	352	72	40	95	45	(D)	(D)
Other manufacturing industries .....	27,31,39	512	73	19	103	73	152	91
Nonmanufacturing.....		6,538	656	265	614	666	655	3,681
Transportation and utilities.....	40-42,44-49	2,061	(D)	(D)	158	132	222	1,525
Communications.....	48	895	3	(D)	46	(D)	0	840
Telephone communications.....	481	887	(D)	0	(D)	(D)	0	840
Other communications.....	482-484,489	8	(D)	(D)	(D)	0	0	0
Electric, gas, and sanitary services.....	49	501	(D)	0	103	119	(D)	(D)
Other transportation and utilities.....	40-42,44-47	664	(D)	0	9	(D)	(D)	(D)
Trade.....	50-59	1,869	303	16	137	259	91	1,063
Finance, insurance, and real estate.....	60-65,67	415	(D)	44	47	115	(D)	(D)
Services.....	701,72,73,75-81, 83,84,87,89	1,865	307	73	238	122	269	855
Business services.....	73	1,258	155	50	155	67	112	720
Computer and data processing services.....	737	518	133	(D)	130	46	(D)	85
Other business services.....	731-736,738	740	22	(D)	25	21	(D)	634
Health services.....	80	140	29	(D)	15	0	52	(D)
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	116	26	(D)	8	0	(D)	(D)
Other health services.....	802-805,808-809	24	3	(D)	7 (S)	0	(D)	0
Engineering and management services.....	87	324	107	(D)	53	23	59	(D)
Engineering, architectural, and surveying.....	871	202	42	11	42	(D)	(D)	(D)
Research, development, and testing.....	873	73	50	4	(D)	0	(D)	0
Other engineering and management services.....	872,874	49	15	(D)	(D)	(D)	(D)	0

See explanatory information and SOURCE at end of table.

Table A-29a. Domestic employment of R&amp;D-performing companies, by industry and size of company: 1995–96

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Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[In thousands]					
1995								
Other services.....	701,72,75–79,81, 83,84,89	142	17	(D)	16	31	47	(D)
Other nonmanufacturing industries.....	07–12,14,15, 161–162,17	329	20	(D)	34	38	(D)	(D)
1996								
All Industries.....		18,102	1,831	806	2,838	2,041	2,734	7,852
Manufacturing.....		11,347	1,251	618	2,095	1,377	2,021	3,984
Food, kindred, and tobacco products .....	20,21	1,085	51	40	217	114	161	500
Textiles and apparel.....	22,23	430	53	(D)	105	59	141	(D)
Lumber, wood products, and furniture.....	24,25	331	45	(D)	74	67	(D)	(D)
Paper and allied products.....	26	560	18	7	100	41	155	239
Chemicals and allied products.....	28	1,049	64	38	198	168	281	301
Industrial chemicals.....	281–82,286	444	19	20	75	61	129	140
Drugs and medicines.....	283	304	6	(D)	53	40	105	(D)
Other chemicals.....	284–85,287–89	301	38	(D)	70	67	47	(D)
Petroleum refining and extraction.....	13,29	286	10	(D)	17	(D)	133	121
Rubber products.....	30	453	67	57	145	(D)	58	(D)
Stone, clay, and glass products.....	32	190	21	10	67	33	60	0
Primary metals.....	33	406	42	10	68	96	88	102
Ferrous metals and products.....	331–32,3398–99	208	26	(D)	42	63	(D)	(D)
Nonferrous metals and products.....	333–36	198	16	(D)	26	33	(D)	(D)
Fabricated metal products.....	34	604	121	(D)	139	65	157	(D)
Machinery.....	35	1,322	197	77	399	183	279	186
Office, computing, and accounting machines.....	357	278	15	(D)	26	44	65	(D)
Other machinery, except electrical.....	351–56,358–59	1,044	182	(D)	373	140	214	(D)
Electrical equipment.....	36	1,388	170	115	269	133	210	491
Radio and TV receiving equipment.....	365	29	8	4	10	(D)	0	0
Communication equipment.....	366	231	33	20	54	(D)	(D)	(D)

See explanatory information and SOURCE at end of table.

Table A-29a. Domestic employment of R&amp;D-performing companies, by industry and size of company: 1995–96

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Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[In thousands]					
1996								
Electronic components.....	367	551	69	49	108	48	(D)	(D)
Other electrical equipment.....	361-64,369	576	60	42	97	45	116	217
Transportation equipment.....	37	1,948	22	39	58	231	131	1,468
Motor vehicles and motor vehicles equipment.....	371	959	(D)	(D)	23	55	87	744
Other transportation equipment.....	373-75,379	284	(D)	0	19	(D)	(D)	85
Aircraft and missiles.....	372,376	705	6	(D)	17	(D)	(D)	639
Professional and scientific instruments.....	38	608	98	(D)	152	71	(D)	219
Scientific and mechanical measuring instruments.....	381-82	294	50	28	57	20	(D)	(D)
Optical, surgical, photographic, and other instruments.....	384-87	314	48	(D)	95	51	(D)	(D)
Other manufacturing industries 1/.....	27,31,39	686	273	48	85	62	91	128
Nonmanufacturing.....		6,755	580	188	743	664	713	3,868
Transportation and utilities.....	40-42,44-49	2,017	17	3	140	147	191	1,518
Communications.....	48	826	5	(D)	(D)	(D)	0	(D)
Telephone communications.....	481	815	0	0	0	(D)	0	(D)
Other communications.....	482-484,489	11	5	(D)	(D)	0	0	0
Electric, gas, and sanitary services.....	49	593	5	(D)	127	132	(D)	167
Other transportation and utilities.....	40-42,44-47	599	8	0	9 (S)	(D)	(D)	542
Trade.....	50-59	1,577	166	75	163	238	87	849
Finance, insurance, and real estate.....	60-65,67	724	12	2	163	81	(D)	(D)
Services.....	701,72,73,75-81, 83,84,87,89	2,219	312	92	239	151	393	1,033
Business services.....	73	1,422	161	70	139	119	143	790
Computer and data processing services.....	737	540	143	65	113	50	(D)	(D)
Other business services.....	731-736,738	882	17	5	26	69	(D)	(D)

See explanatory information and SOURCE at end of table.

Table A-29a. Domestic employment of R&amp;D-performing companies, by industry and size of company: 1995–96

Page 5 of 5

Industry	SIC code	Total	Size of company					
			Fewer than 500 employees	500 to 999 employees	1,000 to 4,999 employees	5,000 to 9,999 employees	10,000 to 24,999 employees	25,000 or more employees
			[In thousands]					
1996								
Health services.....	80	91	15	(D)	13	(D)	50	0
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	74	14	(D)	(D)	0	50	0
Other health services.....	802-805,808-809	17 (S)	2	(D)	(D)	(D)	0	0
Engineering and management services.....	87	507	123	(D)	67	(D)	76	(D)
Engineering, architectural, and surveying.....	871	140	41	(D)	43	(D)	44	0
Research, development, and testing.....	873	302	53	(D)	5	0	(D)	(D)
Other engineering and management services.....	872,874	65	29	(D)	19	0	(D)	0
Other services.....	701,72,75-79,81, 83,84,89	199	13	2	20	(D)	123	(D)
Other nonmanufacturing industries 1/.....	07-12,14,15, 161-162,17	218	73	15	38	46	(D)	(D)

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1/ Beginning in 1996 manufacturing companies with fewer than 50 employees and nonmanufacturing companies with fewer than 15 employees were sampled separately without regard to industry classification to minimize year-to-year variation in survey estimates. Estimates for manufacturing companies in this group are combined with those for companies in "Other manufacturing industries." Estimates for nonmanufacturing companies in this group are combined with those for companies in "Other nonmanufacturing industries." As a result, statistics for "Other manufacturing industries" and for "Other nonmanufacturing industries" for 1996 are not comparable with statistics for prior years.

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.  
(S) = Indicates imputation of more than 50 percent.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

**Table A-30a. Total (company, Federal, and other) funds for industrial R&D performance and number of R&D-performing companies in manufacturing and nonmanufacturing industries, by size of company: 1996**

Page 1 of 1

Distribution by size of company: [Number of employees]	Total	Manufacturing	Nonmanufacturing
	Funds for industrial R&D [Dollars in millions]		
Total.....	\$144,667	\$111,864	\$32,803
Fewer than 500.....	20,249	8,092	12,157
500 to 999.....	4,637	2,898	1,739
1,000 to 4,999.....	18,273	13,568	4,705
5,000 to 9,999.....	11,537	9,079	2,458
10,000 to 24,999.....	20,164	16,566	3,597
25,000 or more.....	69,808	61,662	8,146
Number of R&D-performing companies			
Total.....	34,569	19,090	15,479
Fewer than 500.....	31,519	16,846	14,674
500 to 999.....	1,132	862	270
1,000 to 4,999.....	1,324	973	351
5,000 to 9,999.....	292	202	90
10,000 to 24,999.....	175	131	44
25,000 or more.....	127	76	51

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

Table B-1. Number of companies in the target population and selected for the sample, by industry: 1995

Page 1 of 3

Industry	SIC code	Companies in target population	1995 survey			Companies reporting R&D expenditures for 1995 3/		Companies reporting no R&D expenditures for 1995 4/
			Companies selected for 1995 sample	Noncertainties 1/	Certainties 2/	Greater than or equal to \$1 million	Less than \$1 million	
All Industries.....		1,877,631	23,809	18,444	5,365	3,076	1,578	14,540
Manufacturing.....		199,237	7,595	4,923	2,672	2,126	1,032	3,256
Food, kindred, and tobacco products.....	20,21	10,139	238	150	88	79	24	93
Textiles and apparel.....	22,23	16,368	224	150	74	53	38	85
Lumber, wood products, and furniture.....	24,25	23,786	300	206	94	31	76	135
Paper and allied products.....	26	3,289	226	140	86	59	23	104
Chemicals and allied products.....	28	5,050	426	177	249	237	68	77
Industrial chemicals.....	281-82,286	881	132	49	83	81	18	24
Drugs and medicines.....	283	787	120	40	80	75	14	19
Other chemicals.....	284-85,287-89	3,382	174	88	86	81	36	34
Petroleum refining and extraction.....	13,29	6,030	96	65	31	28	3	58
Rubber products.....	30	9,202	546	428	118	104	106	233
Stone, clay, and glass products.....	32	7,246	378	283	95	37	58	235
Primary metals.....	33	3,684	291	188	103	67	52	123
Ferrous metals and products.....	331-32,3398-99	1,832	106	66	40	28	22	39
Nonferrous metals and products.....	333-36	1,852	185	122	63	39	30	84
Fabricated metal products.....	34	21,906	768	566	202	125	169	337
Machinery.....	35	30,517	782	402	380	388	90	221
Office, computing, and accounting machines.....	357	29,352	645	376	269	107	9	9
Other machinery, except electrical.....	351-56,358-59	1,165	137	26	111	281	81	212
Electrical equipment.....	36	9,290	845	373	472	442	113	166
Radio and TV receiving equipment.....	365	387	75	37	38	17	20	22
Communication equipment.....	366	1,083	182	49	133	130	15	11
Electronic components.....	367	3,897	326	163	163	166	40	71
Other electrical equipment.....	361-64,369	3,923	262	124	138	129	38	62
Transportation equipment.....	37	5,638	278	183	95	94	23	125
Motor vehicles and motor vehicles equipment.....	371	2,596	159	111	48	49	18	77
Other transportation equipment.....	373-75,379	2,134	45	26	19	18	1	19
Aircraft and missiles.....	372,376	908	74	46	28	27	4	29

See explanatory information and SOURCE at end of table.

Table B-1. Number of companies in the target population and selected for the sample, by industry: 1995

Page 2 of 3

Industry	SIC code	Companies in target population	1995 survey			Companies reporting R&D expenditures for 1995 3/		Companies reporting no R&D expenditures for 1995 4/
			Companies selected for 1995 sample	Noncertainties 1/	Certainties 2/	Greater than or equal to \$1 million	Less than \$1 million	
Professional and scientific instruments.....	38	5,984	423	114	309	299	52	43
Scientific and mechanical measuring instruments.....	381-82	2,957	211	55	156	157	27	14
Optical, surgical, photographic, and other instruments.....	384-87	3,027	212	59	153	142	25	29
Other manufacturing industries .....	27,31,39	41,108	1,774	1,498	276	83	137	1,221
Nonmanufacturing .....		1,678,394	16,214	13,521	2,693	950	546	11,284
Transportation and utilities.....	40-42,44-49	74,718	1,067	815	252	80	29	705
Communications.....	48	8,072	556	417	139	20	13	398
Telephone communications.....	481	2,317	105	91	14	13	1	65
Other communications.....	482-484,489	5,755	451	326	125	7	12	333
Electric, gas, and sanitary services.....	49	3,067	194	111	83	45	13	103
Other transportation and utilities.....	40-42,44-47	63,579	317	287	30	15	3	204
Trade.....	50-59	656,166	2,564	2,393	171	138	37	1,692
Finance, insurance, and real estate.....	60-65,67	113,046	1,778	1,527	251	31	16	1,391
Services.....	701,72,73,75-81, 83,84,87,89	586,197	9,865	7,874	1,991	677	448	6,862
Business services.....	73	101,560	2,161	1,732	429	307	142	1,223
Computer and data processing services.....	737	16,895	1,095	836	259	292	106	424
Other business services.....	731-736,738	84,665	1,066	896	170	15	36	799
Health services.....	80	170,698	1,328	1,190	138	18	18	1,027
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	81,538	586	545	41	15	10	448
Other health services.....	802-805,808-809	89,160	742	645	97	3	8	579

See explanatory information and SOURCE at end of table.

Table B-1. Number of companies in the target population and selected for the sample, by industry: 1995

Page 3 of 3

Industry	SIC code	Companies in target population	1995 survey			Companies reporting R&D expenditures for 1995 3/		Companies reporting no R&D expenditures for 1995 4/
			Companies selected for 1995 sample	Noncertainties 1/	Certainties 2/	Greater than or equal to \$1 million	Less than \$1 million	
Engineering and management services.....	87	69,892	4,902	3,596	1,306	333	266	3,508
Engineering, architectural, and surveying.....	871	23,863	4,176	3,041	1,135	149	226	3,137
Research, development, and testing.....	873	5,515	485	338	147	177	38	189
Other engineering and management services.....	872,874	40,514	241	217	24	7	2	182
Other services.....	701,72,75-79, 81,83,84,89	244,047	1,474	1,356	118	19	22	1,104
Other nonmanufacturing industries .....	07-12,14,15, 161-162,17	248,267	940	912	28	24	16	634

1/ Noncertainties are companies whose probability of selection is less than one.

2/ Certainties are companies whose probability of selection is one. This includes companies whose 1994 R&amp;D expenditures are equal to or greater than \$1 million.

3/ This includes Form RD-1L companies for which total R&amp;D expenditure data were imputed.

4/ Does not include companies that did not respond to the survey or that did not indicate any information about R&amp;D performance on a returned questionnaire.

SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table B-2. Relative standard error of estimate (percentage) for selected items, by industry and size of company: 1995

Page 1 of 4

Industry and size of company	SIC code	Number of R&D-performing companies	Domestic net sales of R&D performers	Domestic employment of R&D performers	Number of FTE scientists and engineers	Total R&D	Company and other funds for R&D	Company-financed R&D performed outside of U.S.	Company-financed R&D contracted to outside organizations	Federal funds for R&D	Total funds for basic research	Total funds for applied research	Total funds for development
[Percent]													
All Industries.....		4,654	2.0%	1.7%	1.4%	0.6%	0.6%	0.5%	2.3%	1.0%	3.6%	1.7%	0.7%
Distribution by industry:													
Manufacturing.....		3,158	2.4	1.7	1.6	0.6	0.7	0.3	1.5	0.3	2.5	1.4	0.8
Food, kindred, and tobacco products.....	20,21	103	2.5	6.2	12.7	6.5	6.5	0.0	1.7	0.0	32.2	13.7	4.0
Textiles and apparel.....	22,23	91	5.8	5.1	13.4	8.7	8.7	6.3	13.9	0.0	1.1	15.6	13.2
Lumber, wood products, and furniture.....	24,25	107	10.9	9.1	17.9	10.7	10.8	0.0	4.5	0.0	5.0	22.3	13.3
Paper and allied products.....	26	82	1.2	1.6	1.2	0.8	0.8	0.2	64.5	0.0	1.1	1.5	1.9
Chemicals and allied products.....	28	305	13.6	12.3	3.1	0.5	0.5	0.8	0.7	5.1	1.8	0.4	0.4
Industrial chemicals.....	281-82,286	99	3.8	3.6	2.8	1.5	1.6	2.8	0.0	0.0	1.0	0.7	0.5
Drugs and medicines.....	283	89	1.0	2.2	0.8	0.2	0.2	0.0	0.1	50.9	2.6	0.3	0.3
Other chemicals.....	284-85, 287-89	117	35.9	33.7	16.3	2.1	2.0	0.0	4.3	99.4	13.3	2.0	2.4
Petroleum refining and extraction.....	13,29	31	0.3	1.7	0.3	0.6	0.6	0.0	0.0	0.0	0.0	1.8	0.0
Rubber products.....	30	210	13.7	8.8	4.3	3.1	3.3	0.2	6.5	0.0	13.7	3.2	4.4
Stone, clay, and glass products.....	32	95	2.3	3.1	12.0	2.1	2.2	0.0	10.4	0.0	6.5	1.9	2.8
Primary metals.....	33	119	3.6	8.0	1.7	1.0	1.0	6.7	3.1	8.2	8.2	0.8	1.9
Ferrous metals and products.....	331-32, 3398-99	50	6.1	13.9	2.4	0.8	0.8	12.8	1.7	0.0	4.8	1.0	1.0
Nonferrous metals and products.....	333-36	69	2.3	2.5	2.2	1.5	1.5	0.0	5.0	11.5	13.7	1.4	3.5
Fabricated metal products.....	34	294	2.4	3.5	5.4	2.9	3.1	0.2	11.2	3.6	14.6	3.1	3.8

See explanatory information and SOURCE at end of table.

Table B-2. Relative standard error of estimate (percentage) for selected items, by industry and size of company: 1995

Page 2 of 4

Industry and size of company	SIC code	Number of R&D-performing companies	Domestic net sales of R&D performers	Domestic employment of R&D performers	Number of FTE scientists and engineers	Total R&D	Company and other funds for R&D	Company-financed R&D performed outside of U.S.	Company-financed R&D contracted to outside organizations	Federal funds for R&D	Total funds for basic research	Total funds for applied research	Total funds for development
[Percent]													
Distribution by industry:													
Machinery.....	35	478	14.6%	2.6%	9.6%	2.4%	2.5%	1.6%	12.3%	0.8%	7.0%	7.7%	2.5%
Office, computing, and accounting machines.....	357	116	1.9	2.8	2.2	2.1	2.1	0.0	0.0	0.0	29.5	0.0	3.1
Other machinery, except electrical.....	351-56, 358-59	362	18.6	3.0	15.6	4.3	4.4	2.0	21.1	1.1	7.0	18.1	4.0
Electrical equipment.....	36	555	2.2	1.7	2.5	2.0	2.2	0.6	22.0	1.9	8.5	4.1	3.7
Radio and TV receiving equipment.....	365	37	1.5	2.4	4.7	2.3	2.3	3.7	32.3	0.0	0.0	6.0	2.9
Communication equipment.....	366	145	8.5	5.6	3.2	2.9	3.2	0.1	10.5	5.9	28.8	13.9	3.0
Electronic components.....	367	206	4.4	3.4	3.7	2.5	2.6	1.1	56.3	1.9	12.6	3.4	6.4
Other electrical equipment.....	361-64,369	167	1.6	1.9	6.6	6.3	7.3	0.0	2.8	0.0	4.0	7.1	9.3
Transportation equipment.....	37	117	1.6	2.5	0.4	0.2	0.3	0.0	0.7	0.0	13.0	0.3	0.1
Motor vehicles and motor vehicles equipment.....	371	67	2.2	4.6	1.0	0.4	0.4	0.0	0.5	0.0	40.9	0.3	0.2
Other transportation equipment.....	373-75,379	19	0.8	1.0	0.6	0.4	1.0	0.0	84.4	0.0	0.0	0.0	0.5
Aircraft and missiles.....	372,376	31	0.4	0.7	0.2	0.0	0.1	0.0	0.0	0.0	1.5	0.5	0.0
Professional and scientific instruments.....	38	351	3.3	3.8	3.3	2.5	3.5	1.0	13.5	0.9	7.8	3.5	3.1
Scientific and mechanical measuring instruments.....	381-82	184	3.5	4.1	4.4	2.8	5.2	0.0	23.4	0.9	13.7	3.1	3.6
Optical, surgical, photographic, and other instruments.....	384-87	167	5.7	6.5	4.8	4.5	4.6	1.1	16.3	0.0	6.1	11.3	5.3
Other manufacturing industries....	27,31,39	220	2.3	3.0	7.2	2.2	2.2	3.7	5.1	0.0	4.4	4.6	2.9

See explanatory information and SOURCE at end of table.

Table B-2. Relative standard error of estimate (percentage) for selected items, by industry and size of company: 1995

Page 3 of 4

Industry and size of company	SIC code	Number of R&D-performing companies	Domestic net sales of R&D performers	Domestic employment of R&D performers	Number of FTE scientists and engineers	Total R&D	Company and other funds for R&D	Company-financed R&D performed outside of U.S.	Company-financed R&D contracted to outside organizations	Federal funds for R&D	Total funds for basic research	Total funds for applied research	Total funds for development
[Percent]													
Distribution by industry:													
Nonmanufacturing.....		1,496	3.6%	3.7%	2.4%	1.6%	1.5%	2.5%	7.8%	5.2%	8.3%	4.9%	1.4%
Transportation and utilities.....	40-42,44-49	109	2.9	2.6	2.2	1.1	1.2	0.0	3.6	0.0	30.1	4.0	0.9
Communications.....	48	33	2.5	4.6	2.4	0.8	0.8	0.0	6.0	0.0	0.8	0.1	0.9
Telephone communications.....	481	14	2.6	4.6	2.3	0.8	0.8	0.0	0.0	0.0	0.0	0.0	0.9
Other communications.....	482-484,489	19	3.0	6.8	29.7	9.8	9.8	0.0	79.0	0.0	53.3	5.6	12.0
Electric, gas, and sanitary services.....	49	58	7.2	6.8	6.1	11.3	14.3	0.0	4.2	0.0	74.4	37.5	1.4
Other transportation and utilities.....	40-42,44-47	18	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Trade.....	50-59	175	7.4	10.4	6.0	2.7	2.7	2.3	29.2	0.0	27.2	9.5	1.9
Finance, insurance, and real estate.....	60-65,67	47	10.9	9.2	9.6	13.1	13.2	0.0	0.0	95.3	74.5	41.2	6.1
Services.....	701,72,73, 75-81,83,84, 87,89	1,125	11.4	2.3	3.1	2.5	2.5	5.1	7.0	5.6	8.3	7.1	2.7
Business services.....	73	449	4.6	2.9	4.1	3.1	2.6	9.9	15.4	27.7	11.4	10.8	3.0
Computer and data processing services.....	737	398	5.4	6.9	4.0	3.1	2.6	9.9	15.0	30.2	11.5	11.0	2.9
Other business services.....	731-736,738	51	3.6	1.0	38.9	29.8	10.2	0.0	88.5	70.0	76.5	35.2	42.1
Health services.....	80	36	9.2	9.0	20.8	12.6	12.6	0.0	14.5	0.0	5.7	4.1	19.6
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	25	9.6	10.7	22.5	12.8	12.9	0.0	14.7	0.0	5.9	3.7	19.9
Other health services.....	802-805, 808-809	11	14.2	9.1	52.1	27.6	30.0	0.0	0.0	0.0	0.0	49.6	21.0

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See explanatory information and SOURCE at end of table.

Table B-2. Relative standard error of estimate (percentage) for selected items, by industry and size of company: 1995

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Industry and size of company	SIC code	Number of R&D-performing companies	Domestic net sales of R&D performers	Domestic employment of R&D performers	Number of FTE scientists and engineers	Total R&D	Company and other funds for R&D	Company-financed R&D performed outside of U.S.	Company-financed R&D contracted to outside organizations	Federal funds for R&D	Total funds for basic research	Total funds for applied research	Total funds for development
[Percent]													
Distribution by industry:													
Engineering and management services.....	87	599	26.3%	4.0%	5.2%	4.2%	5.8%	10.0%	6.7%	4.6%	12.2%	10.5%	5.4%
Engineering, architectural, and surveying.....	871	375	1.2	2.5	4.7	6.2	11.2	7.8	26.4	3.6	15.5	31.1	3.0
Research, development, and testing.....	873	215	65.9	7.9	8.0	5.3	5.9	10.4	6.9	8.8	14.9	8.6	5.6
Other engineering and management services...	872,874	9	14.3	21.4	73.4	82.4	83.8	0.0	0.0	0.0	35.5	0.0	87.4
Other services.....	701,72,75-79, 81,83,84,89	41	5.7	10.1	17.0	5.6	5.7	0.0	38.1	0.3	0.0	27.6	3.9
Other nonmanufacturing industries .....	07-12,14,15, 161-162,17	40	24.5	38.2	25.6	20.2	20.8	0.9	4.0	0.0	17.5	38.3	14.4
Distribution by size of company: [Number of employees]													
Total.....		4,654	2.0	1.7	1.4	0.6	0.6	0.5	2.3	1.0	3.6	1.7	0.7
Fewer than 500.....		2,442	9.6	6.9	6.7	4.4	4.6	15.7	17.5	12.3	8.5	8.4	5.8
500 to 999.....		663	11.3	15.8	3.5	2.8	2.9	4.3	9.0	5.2	29.6	5.2	2.1
1,000 to 4,999.....		1,008	3.3	3.7	1.1	0.8	0.8	0.2	2.0	0.2	2.7	2.1	1.0
5,000 to 9,999.....		220	11.5	9.9	1.5	0.8	0.9	0.0	4.0	0.0	10.2	0.2	1.2
10,000 to 24,999.....		171	0.7	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25,000 or more.....		128	0.3	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0

**NOTE:** A description of the standard error of estimate is given in section A under "Survey Methodology." The percentage (or relative) standard errors in this table may be converted to standard errors of estimate by multiplying the percentages shown by the associated estimates. For example, the relative standard error of estimate for R&D performance for all company size groups in the fabricated metal products industry (SIC 34) is shown as 2.9 percent, and the associated total R&D estimate for this industry is shown as \$1,023 million in table A-3, "Total (company and Federal) funds for industrial R&D performance by industry and size of company: 1985-95." The standard error of estimate, then, is 0.029 times 1,023 or 30.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table B-2a. Relative standard error of estimate (percentage) for selected items, by industry and size of company: 1996

Page 1 of 4

Industry and size of company	SIC code	Number of R&D-performing companies	Domestic net sales of R&D performers	Domestic employment of R&D performers	Number of FTE scientists and engineers	Total R&D	Company and other funds for R&D	Company-financed R&D performed outside of U.S.	Company-financed R&D contracted to outside organizations	Federal funds for R&D	Total funds for basic research	Total funds for applied research	Total funds for development
[Percent]													
All Industries.....		3,969	1.9%	1.9%	1.1%	0.7%	0.7%	1.2%	1.0%	1.6%	2.7%	2.3%	0.7%
Distribution by industry:													
Manufacturing.....		2,277	1.1	2.2	1.0	0.6	0.6	0.9	0.8	1.5	2.7	2.4	0.6
Food, kindred, and tobacco products.....	20,21	103	5.6	10.6	12.9	4.2	4.2	0.1	4.2	0.0	12.4	14.1	1.9
Textiles and apparel.....	22,23	98	4.6	6.3	4.2	4.9	4.9	4.4	3.5	0.0	12.8	18.8	7.3
Lumber, wood products, and furniture.....	24,25	88	5.5	6.4	5.4	1.3	1.3	0.0	0.1	0.0	2.2	2.3	2.1
Paper and allied products.....	26	52	6.0	6.8	6.4	5.9	6.1	16.1	10.7	0.0	3.3	6.0	13.1
Chemicals and allied products.....	28	196	1.7	1.9	1.5	0.7	0.7	0.5	0.4	0.0	1.0	1.3	0.9
Industrial chemicals.....	281-82,286	64	3.4	3.3	3.7	2.1	2.3	1.7	2.3	0.0	1.5	4.4	2.5
Drugs and medicines.....	283	51	0.9	1.4	0.5	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0
Other chemicals.....	284-85, 287-89	81	3.3	4.4	3.5	1.6	1.6	0.6	4.3	0.0	13.3	1.5	1.8
Petroleum refining and extraction.....	13,29	22	5.7	6.5	1.9	1.6	1.2	0.0	0.0	72.0	25.3	2.0	1.6
Rubber products.....	30	163	4.9	4.0	4.8	2.6	2.8	0.6	5.3	0.0	18.2	8.3	2.7
Stone, clay, and glass products....	32	57	6.0	7.5	5.6	1.3	1.3	0.0	2.2	0.0	1.5	3.7	0.6
Primary metals.....	33	74	3.2	6.0	3.7	1.6	2.4	0.0	35.1	0.1	2.4	1.6	6.6
Ferrous metals and products.....	331-32, 3398-99	36	4.6	10.0	12.4	6.4	6.5	0.0	0.0	0.0	10.6	2.1	11.7
Nonferrous metals and products.....	333-36	38	4.3	6.5	1.6	0.9	1.5	0.1	48.3	0.1	0.3	2.4	5.5
Fabricated metal products.....	34	185	4.8	5.8	6.4	2.7	2.8	0.4	49.5	0.0	8.3	4.2	5.5
Machinery.....	35	338	1.9	9.7	1.8	1.3	1.4	1.1	1.0	1.5	16.1	3.2	1.6
Office, computing, and accounting machines.....	357	58	0.8	2.0	1.8	1.5	1.5	0.7	0.0	0.0	0.0	0.5	2.1
Other machinery, except electrical.....	351-56, 358-59	280	2.8	12.2	3.3	2.4	2.5	2.7	3.0	2.7	20.1	10.2	2.4

See explanatory information and SOURCE at end of table.

Table B-2a. Relative standard error of estimate (percentage) for selected items, by industry and size of company: 1996

Page 2 of 4

Industry and size of company	SIC code	Number of R&D-performing companies	Domestic net sales of R&D performers	Domestic employment of R&D performers	Number of FTE scientists and engineers	Total R&D	Company and other funds for R&D	Company-financed R&D performed outside of U.S.	Company-financed R&D contracted to outside organizations	Federal funds for R&D	Total funds for basic research	Total funds for applied research	Total funds for development
[Percent]													
Distribution by industry:													
Electrical equipment.....	36	375	1.3%	2.5%	1.8%	1.7%	1.9%	6.7%	14.9%	1.9%	11.9%	5.5%	2.9%
Radio and TV receiving equipment.....	365	24	2.9	15.3	1.7	2.5	2.5	4.4	0.0	0.0	0.0	2.2	3.4
Communication equipment.....	366	99	2.6	3.7	2.6	2.9	3.3	0.2	14.4	0.4	16.0	8.5	3.0
Electronic components.....	367	116	2.3	5.3	2.3	2.0	2.1	1.9	28.3	3.1	10.5	7.9	3.5
Other electrical equipment.....	361-64,369	136	2.0	2.8	6.6	6.3	7.0	24.5	13.9	0.4	22.9	4.7	8.4
Transportation equipment.....	37	72	0.9	7.4	0.5	0.3	0.4	0.0	0.0	0.3	4.1	1.6	0.0
Motor vehicles and motor vehicles equipment.....	371	32	1.0	4.0	0.5	0.4	0.5	0.0	0.0	0.0	0.0	0.0	0.0
Other transportation equipment.....	373-75,379	16	9.2	48.9	17.2	7.1	1.6	0.0	0.0	15.0	0.3	45.9	2.6
Aircraft and missiles.....	372,376	24	0.6	0.8	0.4	0.2	0.7	0.0	0.0	0.0	4.8	0.0	0.0
Professional and scientific instruments.....	38	248	1.6	2.0	1.9	1.1	1.6	1.3	10.4	0.2	4.2	6.7	1.1
Scientific and mechanical measuring instruments.....	381-82	126	2.3	2.8	2.6	1.7	3.6	6.2	17.2	0.2	6.8	18.1	1.8
Optical, surgical, photographic, and other instruments.....	384-87	122	2.3	2.8	2.5	1.2	1.2	0.5	11.9	1.0	5.4	2.5	1.3
Other manufacturing industries 1/.....	27,31,39	206	6.2	6.9	14.4	15.6	12.9	2.3	24.8	55.0	36.3	35.6	15.7
Nonmanufacturing.....		1,692	5.3	3.6	2.9	2.2	2.3	5.6	3.3	6.7	6.1	5.1	2.2
Transportation and utilities.....	40-42,44-49	124	1.1	1.0	1.2	2.4	2.5	0.0	0.5	0.0	0.2	0.3	3.2
Communications.....	48	24	1.4	0.3	1.4	0.5	0.5	0.0	0.4	0.0	0.0	0.0	0.7
Telephone communications.....	481	11	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other communications.....	482-484,489	13	51.4	25.2	43.9	28.4	28.4	0.0	46.9	0.0	0.0	0.0	37.8

See explanatory information and SOURCE at end of table.

Table B-2a. Relative standard error of estimate (percentage) for selected items, by industry and size of company: 1996

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Industry and size of company	SIC code	Number of R&D-performing companies	Domestic net sales of R&D performers	Domestic employment of R&D performers	Number of FTE scientists and engineers	Total R&D	Company and other funds for R&D	Company-financed R&D performed outside of U.S.	Company-financed R&D contracted to outside organizations	Federal funds for R&D	Total funds for basic research	Total funds for applied research	Total funds for development
[Percent]													
Distribution by industry:													
Electric, gas, and sanitary services.....	49	85	0.7%	0.6%	1.8%	2.8%	3.1%	0.0%	0.8%	0.0%	0.2%	2.9%	4.1%
Other transportation and utilities.....	40-42,44-47	15	6.0	3.2	6.5	49.2	52.0	0.0	23.8	0.0	40.0	58.5	65.1
Trade.....	50-59	161	9.7	11.4	9.2	8.0	8.1	34.3	6.6	9.7	27.6	15.0	7.8
Finance, insurance, and real estate.....	60-65,67	45	20.1	14.4	17.5	14.0	14.1	0.0	0.3	0.0	38.7	53.5	12.3
Services.....	701,72,73, 75-81,83, 84,87,89	1,274	9.0	5.3	2.8	1.3	1.4	0.8	6.8	3.2	5.2	2.3	1.4
Business services.....	73	569	3.3	2.8	2.0	1.8	1.7	2.0	11.5	15.6	10.7	3.5	1.8
Computer and data processing services.....	737	523	4.1	6.4	2.0	1.8	1.7	1.9	11.5	16.2	9.1	3.6	1.9
Other business services.....	731-736,738	46	4.3	2.2	23.0	16.7	17.7	86.8	21.9	0.0	91.6	5.1	13.9
Health services.....	80	34	7.7	8.5	39.5	2.7	2.7	0.0	8.9	8.9	13.3	1.8	3.7
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	26	8.1	10.2	41.2	2.7	2.7	0.0	9.7	12.6	13.5	1.9	3.8
Other health services.....	802-805, 808-809	8	8.3	8.0	0.2	8.9	9.4	0.0	0.0	0.0	68.5	0.0	0.1
Engineering and management services.....	87	641	18.5	18.4	2.6	2.1	2.7	3.7	9.9	3.0	6.0	3.4	2.6
Engineering, architectural, and surveying.....	871	261	1.7	2.1	3.9	5.9	9.3	3.0	6.3	6.6	12.6	12.7	6.0
Research, development, and testing.....	873	356	34.5	30.0	2.1	1.9	2.6	4.3	10.5	2.0	5.1	2.2	2.5

See explanatory information and SOURCE at end of table.

Table B-2a. Relative standard error of estimate (percentage) for selected items, by industry and size of company: 1996

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Industry and size of company	SIC code	Number of R&D-performing companies	Domestic net sales of R&D performers	Domestic employment of R&D performers	Number of FTE scientists and engineers	Total R&D	Company and other funds for R&D	Company-financed R&D performed outside of U.S.	Company-financed R&D contracted to outside organizations	Federal funds for R&D	Total funds for basic research	Total funds for applied research	Total funds for development
[Percent]													
Distribution by industry:													
Other engineering and management services...	872,874	24	37.8%	33.3%	32.9%	33.3%	33.9%	0.0%	0.0%	83.8%	66.7%	50.2%	43.2%
Other services.....	701,72,75-79, 81, 83,84,89	30	35.2	28.9	49.5	6.6	6.8	0.0	20.1	0.0	12.9	1.2	8.4
Other nonmanufacturing industries 1/.....	07-12,14,15, 161-162,17	88	20.0	7.5	22.0	28.1	28.9	0.0	58.3	80.4	28.2	47.1	29.1
Distribution by size of company: [Number of employees]													
Total.....		3,969	1.9	1.9	1.1	0.7	0.7	1.2	1.0	1.6	2.7	2.3	0.7
Fewer than 500.....		2,032	6.5	4.6	4.9	4.7	4.8	28.9	8.5	16.4	8.8	10.2	5.2
500 to 999.....		497	10.9	10.4	3.8	3.0	3.2	19.7	3.0	5.3	6.7	5.6	2.7
1,000 to 4,999.....		909	6.8	7.2	1.7	1.2	1.1	3.9	1.0	10.4	2.9	2.7	1.1
5,000 to 9,999.....		243	1.2	8.5	0.7	0.4	0.1	0.6	0.2	8.5	2.3	1.9	0.1
10,000 to 24,999.....		167	2.7	2.6	0.3	0.1	0.1	0.0	0.1	0.0	0.2	0.1	0.0
25,000 or more.....		121	2.9	2.1	0.7	0.2	0.2	0.0	0.0	0.0	0.4	0.2	0.3

1/ Beginning in 1996 manufacturing companies with fewer than 50 employees and nonmanufacturing companies with fewer than 15 employees were sampled separately without regard to industry classification to minimize year-to-year variation in survey estimates. Estimates for manufacturing companies in this group are combined with those for companies in "Other manufacturing industries." Estimates for nonmanufacturing companies in this group are combined with those for companies in "Other nonmanufacturing industries." As a result, statistics for "Other manufacturing industries" and for "Other nonmanufacturing industries" for 1996 are not comparable with statistics for prior years.

**NOTE:** A description of the standard error of estimate is given in section A under "Methodology of Survey." The percentage (or relative) standard errors in this table may be converted to standard errors of estimate by multiplying the percentages shown by the associated estimates. For example, the relative standard error of estimate for R&D performance for all company size groups in the chemicals and allied products industry (SIC 28) is shown as 0.7 percent, and the associated total R&D estimate for this industry is shown as \$18,024 million in table A-3, "Total (company and Federal) funds for industrial R&D performance by industry and size of company: 1986-96." The standard error of estimate, then, is 0.007 times 18,024 or 126.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

Table B-3. Unit response rates—percentage of companies that responded to survey, by industry: 1995

Page 1 of 6

Industry	SIC code	Number of companies that received questionnaire	Response rate
All Industries.....		23,697	85.2%
Manufacturing.....		7,578	85.4
Food, kindred, and tobacco products.....	20,21	236	84.3
Textiles and apparel.....	22,23	220	81.8
Lumber, wood products, and furniture.....	24,25	299	84.9
Paper and allied products.....	26	225	87.6
Chemicals and allied products.....	28	424	86.8
Industrial chemicals.....	281-82,286	132	90.9
Drugs and medicines.....	283	120	83.3
Other chemicals.....	284-85,287-89	172	86.0
Petroleum refining and extraction.....	13,29	96	92.7
Rubber products.....	30	543	83.2
Stone, clay, and glass products.....	32	378	92.1
Primary metals.....	33	288	84.7
Ferrous metals and products.....	331-32,3398-99	105	84.8
Nonferrous metals and products.....	333-36	183	84.7
Fabricated metal products.....	34	762	85.2
Machinery.....	35	780	86.7
Office, computing, and accounting machines.....	357	135	81.5
Other machinery, except electrical.....	351-56,358-59	645	87.8
Electrical equipment.....	36	840	81.7
Radio and TV receiving equipment.....	365	75	81.3
Communication equipment.....	366	179	79.3
Electronic components.....	367	325	82.2
Other electrical equipment.....	361-64,369	261	82.8
Transportation equipment.....	37	278	86.7
Motor vehicles and motor vehicles equipment.....	371	159	92.5
Other transportation equipment.....	373-75,379	45	77.8
Aircraft and missiles.....	372,376	74	79.7
Professional and scientific instruments.....	38	422	85.5
Scientific and mechanical measuring instruments.....	381-82	211	87.2
Optical, surgical, photographic, and other instruments.....	384-87	211	83.9
Other manufacturing industries.....	27,31,39	1,751	86.3

See explanatory information and SOURCE at end of table.

**Table B-3. Unit response rates—percentage of companies that responded to survey, by industry: 1995**

Page 2 of 6

Industry	SIC code	Number of companies that received questionnaire	Response rate
Nonmanufacturing.....		16,119	85.1%
Transportation and utilities.....	40-42,44-49	1,060	83.7
Communications.....	48	552	84.8
Telephone communications.....	481	104	84.6
Other communications.....	482-484,489	448	84.8
Electric, gas, and sanitary services.....	49	194	89.2
Other transportation and utilities.....	40-42,44-47	314	78.3
Trade.....	50-59	2,554	80.8
Finance, insurance, and real estate.....	60-65,67	1,770	87.4
Services.....	701,72,73,75-81, 83,84,87,89	9,830	86.2
Business services.....	73	2,146	81.8
Computer and data processing services.....	737	1,088	78.4
Other business services.....	731-736,738	1,058	85.3
Health services.....	80	1,325	86.8
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	586	87.2
Other health services.....	802-805,808-809	739	86.5
Engineering and management services.....	87	4,891	88.2
Engineering, architectural, and surveying.....	871	4,168	88.6
Research, development, and testing.....	873	483	85.1
Other engineering and management services.....	872,874	240	88.3
Other services.....	701,72,75-79,81, 83,84,89	1,468	85.1
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	905	82.4

See explanatory information and SOURCE at end of table.

Table B-3. Unit response rates—percentage of companies that responded to survey, by industry: 1995

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Industry	SIC code	Number of companies that received questionnaire	Response rate
All companies receiving form RD-1L			
All Industries.....		2,747	87.4%
Manufacturing.....		2,064	87.6
Food, kindred, and tobacco products.....	20,21	85	89.4
Textiles and apparel.....	22,23	55	87.3
Lumber, wood products, and furniture.....	24,25	30	86.7
Paper and allied products.....	26	58	91.4
Chemicals and allied products.....	28	244	90.2
Industrial chemicals.....	281-82,286	83	92.8
Drugs and medicines.....	283	80	86.3
Other chemicals.....	284-85,287-89	81	91.4
Petroleum refining and extraction.....	13,29	31	90.3
Rubber products.....	30	91	86.8
Stone, clay, and glass products.....	32	33	93.9
Primary metals.....	33	66	89.4
Ferrous metals and products.....	331-32,3398-99	34	91.2
Nonferrous metals and products.....	333-36	32	87.5
Fabricated metal products.....	34	121	86.8
Machinery.....	35	367	86.9
Office, computing, and accounting machines.....	357	109	82.6
Other machinery, except electrical.....	351-56,358-59	258	88.8
Electrical equipment.....	36	394	84.5
Radio and TV receiving equipment.....	365	14	85.7
Communication equipment.....	366	116	84.5
Electronic components.....	367	142	86.6
Other electrical equipment.....	361-64,369	122	82.0
Transportation equipment.....	37	96	91.7
Motor vehicles and motor vehicles equipment.....	371	48	97.9
Other transportation equipment.....	373-75,379	20	80.0
Aircraft and missiles.....	372,376	28	89.3
Professional and scientific instruments.....	38	307	87.6
Scientific and mechanical measuring instruments.....	381-82	156	89.1
Optical, surgical, photographic, and other instruments.....	384-87	151	86.1
Other manufacturing industries.....	27,31,39	86	87.2

See explanatory information and SOURCE at end of table.

**Table B-3. Unit response rates—percentage of companies that responded to survey, by industry: 1995**

Page 4 of 6

Industry	SIC code	Number of companies that received questionnaire	Response rate
Nonmanufacturing.....		683	86.5%
Transportation and utilities.....	40-42,44-49	84	86.9
Communications.....	48	21	85.7
Telephone communications.....	481	14	92.9
Other communications.....	482-484,489	7	71.4
Electric, gas, and sanitary services.....	49	48	89.6
Other transportation and utilities.....	40-42,44-47	15	80.0
Trade.....	50-59	158	90.5
Finance, insurance, and real estate.....	60-65,67	36	94.4
Services.....	701,72,73,75-81, 83,84,87,89	377	83.6
Business services.....	73	170	80.6
Computer and data processing services.....	737	156	80.1
Other business services.....	731-736,738	14	85.7
Health services.....	80	23	91.3
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	18	100.0
Other health services.....	802-805,808-809	5	60.0
Engineering and management services.....	87	163	84.7
Engineering, architectural, and surveying.....	871	37	83.8
Research, development, and testing.....	873	117	86.3
Other engineering and management services.....	872,874	9	66.7
Other services.....	701,72,75-79,81, 83,84,89	21	90.5
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	28	92.9

See explanatory information and SOURCE at end of table.

Table B-3. Unit response rates—percentage of companies that responded to survey, by industry: 1995

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Industry	SIC code	Number of companies that received questionnaire	Response rate
All companies receiving form RD-1A			
All Industries.....		20,950	84.9%
Manufacturing.....		5,514	84.6
Food, kindred, and tobacco products.....	20,21	151	81.5
Textiles and apparel.....	22,23	165	80.0
Lumber, wood products, and furniture.....	24,25	269	84.8
Paper and allied products.....	26	167	86.2
Chemicals and allied products.....	28	180	82.2
Industrial chemicals.....	281-82,286	49	87.8
Drugs and medicines.....	283	40	77.5
Other chemicals.....	284-85,287-89	91	81.3
Petroleum refining and extraction.....	13,29	65	93.8
Rubber products.....	30	452	82.5
Stone, clay, and glass products.....	32	345	91.9
Primary metals.....	33	222	83.3
Ferrous metals and products.....	331-32,3398-99	71	81.7
Nonferrous metals and products.....	333-36	151	84.1
Fabricated metal products.....	34	641	84.9
Machinery.....	35	413	86.4
Office, computing, and accounting machines.....	357	26	76.9
Other machinery, except electrical.....	351-56,358-59	387	87.1
Electrical equipment.....	36	446	79.1
Radio and TV receiving equipment.....	365	61	80.3
Communication equipment.....	366	63	69.8
Electronic components.....	367	183	78.7
Other electrical equipment.....	361-64,369	139	83.5
Transportation equipment.....	37	182	84.1
Motor vehicles and motor vehicles equipment.....	371	111	90.1
Other transportation equipment.....	373-75,379	25	76.0
Aircraft and missiles.....	372,376	46	73.9
Professional and scientific instruments.....	38	115	80.0
Scientific and mechanical measuring instruments.....	381-82	55	81.8
Optical, surgical, photographic, and other instruments.....	384-87	60	78.3
Other manufacturing industries.....	27,31,39	1,665	86.2

See explanatory information and SOURCE at end of table.

**Table B-3. Unit response rates—percentage of companies that responded to survey, by industry: 1995**

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Industry	SIC code	Number of companies that received questionnaire	Response rate
Nonmanufacturing.....		15,436	85.0%
Transportation and utilities.....	40–42,44–49	976	83.4
Communications.....	48	531	84.7
Telephone communications.....	481	90	83.3
Other communications.....	482–484,489	441	85.0
Electric, gas, and sanitary services.....	49	146	89.0
Other transportation and utilities.....	40–42,44–47	299	78.3
Trade.....	50–59	2,396	80.2
Finance, insurance, and real estate.....	60–65,67	1,734	87.3
Services.....	701,72,73,75–81, 83,84,87,89	9,453	86.3
Business services.....	73	1,976	81.9
Computer and data processing services.....	737	932	78.1
Other business services.....	731–736,738	1,044	85.3
Health services.....	80	1,302	86.7
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	568	86.8
Other health services.....	802–805,808–809	734	86.6
Engineering and management services.....	87	4,728	88.3
Engineering, architectural, and surveying.....	871	4,131	88.6
Research, development, and testing.....	873	366	84.7
Other engineering and management services.....	872,874	231	89.2
Other services.....	701,72,75–79,81, 83,84,89	1,447	85.1
Other nonmanufacturing industries.....	07–12,14,15, 161–162,17	877	82.1

**NOTE:** The calculation of the response rate was based on all companies that responded to the survey, including those that reported they were out of scope, out of business, or had merged with another company. It excludes companies for which total R&D expenditure data were imputed.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table B-3a. Unit response rates—percentage of companies that responded to survey, by industry: 1996

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Industry	SIC code	Number of companies that received questionnaire	Response rate
All Industries.....		24,819	83.9%
Manufacturing.....		4,744	85.4
Food, kindred, and tobacco products.....	20,21	181	85.1
Textiles and apparel.....	22,23	246	85.4
Lumber, wood products, and furniture.....	24,25	169	91.7
Paper and allied products.....	26	74	93.2
Chemicals and allied products.....	28	220	90.0
Industrial chemicals.....	281-82,286	71	95.8
Drugs and medicines.....	283	55	89.1
Other chemicals.....	284-85,287-89	94	86.2
Petroleum refining and extraction.....	13,29	62	90.3
Rubber products.....	30	253	85.4
Stone, clay, and glass products.....	32	90	93.3
Primary metals.....	33	105	89.5
Ferrous metals and products.....	331-32,3398-99	48	93.8
Nonferrous metals and products.....	333-36	57	86.0
Fabricated metal products.....	34	306	86.6
Machinery.....	35	453	85.2
Office, computing, and accounting machines.....	357	65	83.1
Other machinery, except electrical.....	351-56,358-59	388	85.6
Electrical equipment.....	36	476	83.2
Radio and TV receiving equipment.....	365	34	82.4
Communication equipment.....	366	112	75.0
Electronic components.....	367	140	87.1
Other electrical equipment.....	361-64,369	190	85.3
Transportation equipment.....	37	95	89.5
Motor vehicles and motor vehicles equipment.....	371	44	90.9
Other transportation equipment.....	373-75,379	24	87.5
Aircraft and missiles.....	372,376	27	88.9
Professional and scientific instruments.....	38	300	81.3
Scientific and mechanical measuring instruments.....	381-82	143	82.5
Optical, surgical, photographic, and other instruments.....	384-87	157	80.3
Other manufacturing industries 1/.....	27,31,39	1,714	81.9

See explanatory information and SOURCE at end of table.

Table B-3a. Unit response rates—percentage of companies that responded to survey, by industry: 1996

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Industry	SIC code	Number of companies that received questionnaire	Response rate
Nonmanufacturing .....		20,075	83.6%
Transportation and utilities.....	40-42,44-49	894	84.1
Communications.....	48	174	80.5
Telephone communications.....	481	34	76.5
Other communications.....	482-484,489	140	81.4
Electric, gas, and sanitary services.....	49	249	88.4
Other transportation and utilities.....	40-42,44-47	471	83.2
Trade.....	50-59	5,043	82.1
Finance, insurance, and real estate.....	60-65,67	844	88.7
Services.....	701,72,73,75-81, 83,84,87,89	7,047	84.8
Business services.....	73	2,144	82.0
Computer and data processing services...	737	1,168	80.2
Other business services.....	731-736,738	976	84.2
Health services.....	80	962	87.2
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	564	87.6
Other health services.....	802-805,808-809	398	86.7
Engineering and management services.....	87	2,632	86.6
Engineering, architectural, and surveying.....	871	1,223	87.2
Research, development, and testing.....	873	851	85.2
Other engineering and management services.....	872,874	558	87.6
Other services.....	701,72,75-79,81, 83,84,89	1,309	83.7
Other nonmanufacturing industries 1/.....	07-12,14,15, 161-162,17	6,247	82.8

See explanatory information and SOURCE at end of table.

Table B-3a. Unit response rates—percentage of companies that responded to survey, by industry: 1996

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Industry	SIC code	Number of companies that received questionnaire	Response rate
All companies receiving form RD-1S			
All Industries.....		2,522	86.6%
Manufacturing.....		1,638	87.4
Food, kindred, and tobacco products.....	20,21	76	90.8
Textiles and apparel.....	22,23	54	87.0
Lumber, wood products, and furniture.....	24,25	32	93.8
Paper and allied products.....	26	47	91.5
Chemicals and allied products.....	28	177	91.0
Industrial chemicals.....	281-82,286	60	96.7
Drugs and medicines.....	283	53	90.6
Other chemicals.....	284-85,287-89	64	85.9
Petroleum refining and extraction.....	13,29	20	95.0
Rubber products.....	30	100	89.0
Stone, clay, and glass products.....	32	40	92.5
Primary metals.....	33	62	90.3
Ferrous metals and products.....	331-32,3398-99	26	92.3
Nonferrous metals and products.....	333-36	36	88.9
Fabricated metal products.....	34	122	87.7
Machinery.....	35	280	86.1
Office, computing, and accounting machines.....	357	59	86.4
Other machinery, except electrical.....	351-56,358-59	221	86.0
Electrical equipment.....	36	303	84.2
Radio and TV receiving equipment.....	365	16	93.8
Communication equipment.....	366	84	76.2
Electronic components.....	367	107	87.9
Other electrical equipment.....	361-64,369	96	85.4
Transportation equipment.....	37	66	89.4
Motor vehicles and motor vehicles equipment.....	371	28	92.9
Other transportation equipment.....	373-75,379	15	86.7
Aircraft and missiles.....	372,376	23	87.0
Professional and scientific instruments.....	38	183	83.6
Scientific and mechanical measuring instruments.....	381-82	92	81.5
Optical, surgical, photographic, and other instruments.....	384-87	91	85.7
Other manufacturing industries 1/.....	27,31,39	76	86.8

See explanatory information and SOURCE at end of table.

**Table B-3a. Unit response rates—percentage of companies that responded to survey, by industry: 1996**

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Industry	SIC code	Number of companies that received questionnaire	Response rate
Nonmanufacturing.....		884	85.2%
Transportation and utilities.....	40-42,44-49	77	84.4
Communications.....	48	17	88.2
Telephone communications.....	481	11	100.0
Other communications.....	482-484,489	6	66.7
Electric, gas, and sanitary services.....	49	46	84.8
Other transportation and utilities.....	40-42,44-47	14	78.6
Trade.....	50-59	105	81.9
Finance, insurance, and real estate.....	60-65,67	29	86.2
Services.....	701,72,73,75-81, 83,84,87,89	641	85.6
Business services.....	73	294	85.4
Computer and data processing services...	737	277	85.2
Other business services.....	731-736,738	17	88.2
Health services.....	80	18	77.8
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	15	73.3
Other health services.....	802-805,808-809	3	100.0
Engineering and management services.....	87	310	85.5
Engineering, architectural, and surveying.....	871	137	82.5
Research, development, and testing.....	873	167	88.6
Other engineering and management services.....	872,874	6	66.7
Other services.....	701,72,75-79,81, 83,84,89	19	100.0
Other nonmanufacturing industries 1/.....	07-12,14,15, 161-162,17	32	87.5

See explanatory information and SOURCE at end of table.

Table B-3a. Unit response rates—percentage of companies that responded to survey, by industry: 1996

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Industry	SIC code	Number of companies that received questionnaire	Response rate
All companies receiving form RD-1A			
All Industries.....		22,332	83.5%
Manufacturing.....		3,108	84.2
Food, kindred, and tobacco products.....	20,21	105	81.0
Textiles and apparel.....	22,23	192	84.9
Lumber, wood products, and furniture.....	24,25	137	91.2
Paper and allied products.....	26	27	96.3
Chemicals and allied products.....	28	43	86.0
Industrial chemicals.....	281-82,286	11	90.9
Drugs and medicines.....	283	2	50.0
Other chemicals.....	284-85,287-89	30	86.7
Petroleum refining and extraction.....	13,29	42	88.1
Rubber products.....	30	153	83.0
Stone, clay, and glass products.....	32	50	94.0
Primary metals.....	33	43	88.4
Ferrous metals and products.....	331-32,3398-99	22	95.5
Nonferrous metals and products.....	333-36	21	81.0
Fabricated metal products.....	34	184	85.9
Machinery.....	35	174	83.3
Office, computing, and accounting machines.....	357	6	50.0
Other machinery, except electrical.....	351-56,358-59	168	84.5
Electrical equipment.....	36	173	81.5
Radio and TV receiving equipment.....	365	18	72.2
Communication equipment.....	366	28	71.4
Electronic components.....	367	33	84.8
Other electrical equipment.....	361-64,369	94	85.1
Transportation equipment.....	37	29	89.7
Motor vehicles and motor vehicles equipment.....	371	16	87.5
Other transportation equipment.....	373-75,379	9	88.9
Aircraft and missiles.....	372,376	4	100.0
Professional and scientific instruments.....	38	118	77.1
Scientific and mechanical measuring instruments.....	381-82	52	82.7
Optical, surgical, photographic, and other instruments.....	384-87	66	72.7
Other manufacturing industries 1/.....	27,31,39	1,638	81.6

See explanatory information and SOURCE at end of table.

Table B-3a. Unit response rates—percentage of companies that responded to survey, by industry: 1996

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Industry	SIC code	Number of companies that received questionnaire	Response rate
Nonmanufacturing.....		19,224	83.4%
Transportation and utilities.....	40-42,44-49	824	83.4
Communications.....	48	163	76.7
Telephone communications.....	481	23	65.2
Other communications.....	482-484,489	140	78.6
Electric, gas, and sanitary services.....	49	203	89.2
Other transportation and utilities.....	40-42,44-47	458	83.2
Trade.....	50-59	4,938	82.1
Finance, insurance, and real estate.....	60-65,67	815	88.8
Services.....	701,72,73,75-81, 83,84,87,89	6,432	84.3
Business services.....	73	1,864	80.9
Computer and data processing services...	737	893	78.5
Other business services.....	731-736,738	971	83.1
Health services.....	80	956	86.3
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	552	87.5
Other health services.....	802-805,808-809	404	84.7
Engineering and management services.....	87	2,322	86.8
Engineering, architectural, and surveying.....	871	1,086	87.8
Research, development, and testing.....	873	684	84.4
Other engineering and management services.....	872,874	552	87.9
Other services.....	701,72,75-79,81, 83,84,89	1,290	83.5
Other nonmanufacturing industries 1/.....	07-12,14,15, 161-162,17	6,215	82.8

1/ Beginning in 1996 manufacturing companies with fewer than 50 employees and nonmanufacturing companies with fewer than 15 employees were sampled separately without regard to industry classification to minimize year-to-year variation in survey estimates. Estimates for manufacturing companies in this group are combined with those for companies in "Other manufacturing industries." Estimates for nonmanufacturing companies in this group are combined with those for companies in "Other nonmanufacturing industries." As a result, statistics for "Other manufacturing industries" and for "Other nonmanufacturing industries" for 1996 are not comparable with statistics for prior years.

**NOTES:** The calculation of the response rate was based on all companies that responded to the survey, including those that reported they were out of scope, out of business, or had merged with another company. It excludes companies for which total R&D expenditure data were imputed.

The total number of companies is generally less than the number of companies sampled in table B-1 because some companies selected for the survey went out of business or were merged with other companies during the time between survey sampling and survey mailout.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

Table B-4. Imputation rates for selected items, by industry: 1995

Page 1 of 3

Industry	SIC code	Net sales	Total employment	R&D scientists/engineers	Total R&D			R&D by cost			R&D by state	Energy R&D	Pollution abatement	R&D outside company	Foreign R&D
					Total	Company	Federal	Wages	Materials	Other costs					
[Percent]															
All Industries.....		4.3%	0.5%	35.1%	7.8%	6.5%	16.9%	56.0%	56.2%	58.7%	50.8%	11.1%	25.5%	12.4%	10.1%
Manufacturing.....		4.4	1.7	40.6	7.6	6.7	14.5	61.1	59.3	62.1	54.7	0.0	4.2	15.2	11.7
Food, kindred, and tobacco products.....	20,21	2.5	2.7	26.7	3.2	3.2	0.0	38.2	40.4	36.2	31.7	0.0	0.0	2.1	1.3
Textiles and apparel.....	22,23	7.5	6.0	19.6	12.5	12.5	0.0	71.1	54.2	69.1	65.9	0.0	0.0	0.0	0.0
Lumber, wood products, and furniture.....	24,25	6.7	5.5	41.7	11.6	10.6	100.0	72.4	71.9	83.8	71.2	0.0	0.0	1.5	76.8
Paper and allied products.....	26	15.7	18.1	65.8	49.6	48.0	98.7	84.6	82.5	89.4	75.3	0.0	0.0	1.0	82.0
Chemicals and allied products.....	28	8.0	8.0	26.1	8.1	7.6	50.4	42.1	38.7	45.2	0.0	0.0	0.8	17.2	10.9
Industrial chemicals.....	281-82,286	5.8	8.5	22.8	5.3	3.5	55.5	39.6	37.0	52.3	56.6	0.0	0.1	0.0	1.7
Drugs and medicines.....	283	14.6	11.8	26.7	10.6	10.6	9.0	44.4	40.5	45.1	43.5	0.0	0.0	23.4	17.0
Other chemicals.....	284-85,	5.5	4.7	30.2	3.4	3.4	0.0	37.0	31.9	29.6	33.8	0.0	23.0	0.2	0.4
	287-89														
Petroleum refining and extraction.....	13,29	1.4	2.9	33.7	1.4	1.4	0.0	35.0	36.4	35.1	45.6	0.0	0.0	9.7	0.0
Rubber products.....	30	3.9	3.7	29.7	4.6	4.9	0.0	54.1	51.3	52.7	51.3	0.0	0.0	1.4	1.0
Stone, clay, and glass products...	32	0.6	0.4	30.6	1.1	1.0	15.1	41.4	43.8	40.4	40.8	0.0	0.0	0.0	0.0
Primary metals.....	33	0.9	2.6	38.2	6.7	6.9	0.0	50.3	58.9	43.0	0.0	0.0	0.0	4.7	0.0
Ferrous metals and products.....	331-32, 3398-99	1.7	2.3	25.8	11.2	11.4	0.0	28.2	39.1	20.4	24.8	0.0	0.0	0.0	0.0
Nonferrous metals and products.....	333-36	0.7	3.0	46.3	4.0	4.2	0.0	65.1	64.8	62.5	75.4	0.0	0.0	8.4	0.0
Fabricated metal products.....	34	7.5	7.4	24.9	6.9	4.9	28.4	41.7	40.6	39.3	44.2	0.0	0.0	12.2	0.6
Machinery.....	35	7.5	11.7	46.1	13.0	13.0	8.2	53.2	49.5	55.1	0.0	0.0	0.3	11.7	11.8
Office, computing, and accounting machines.....	357	17.0	29.9	45.5	22.4	22.4	24.8	66.4	65.3	67.5	62.2	0.0	0.0	28.1	20.0
Other machinery, except electrical.....	351-56, 358-59	5.0	8.3	46.5	4.2	4.2	2.3	35.8	40.0	36.9	32.5	0.0	0.3	0.0	9.9

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See explanatory information and SOURCE at end of table.

Table B-4. Imputation rates for selected items, by industry: 1995

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Industry	SIC code	Net sales	Total employment	R&D scientists/engineers	Total R&D			R&D by cost			R&D by state	Energy R&D	Pollution abatement	R&D outside company	Foreign R&D
					Total	Company	Federal	Wages	Materials	Other costs					
[Percent]															
Electrical equipment.....	36	6.3%	7.1%	48.2%	4.3%	6.3%	1.1%	75.3%	69.3%	72.1%	0.0%	0.0%	0.4%	1.9%	3.5%
Radio and TV receiving equipment.....	365	10.7	14.5	24.2	9.3	9.5	0.0	80.6	77.6	83.5	74.8	0.0	0.0	0.0	71.7
Communication equipment.....	366	5.8	9.0	62.8	6.6	7.6	0.3	77.8	77.9	83.5	80.0	0.0	0.0	0.5	1.4
Electronic components.....	367	9.5	9.1	50.5	3.4	4.3	0.4	84.3	83.9	85.2	55.7	0.0	2.0	2.4	0.2
Other electrical equipment.....	361-64,369	3.4	4.7	23.4	4.3	10.5	2.7	37.3	32.6	33.2	35.1	0.0	0.0	2.2	7.8
Transportation equipment.....	37	0.8	1.6	35.6	2.0	0.7	3.8	61.4	60.5	66.2	0.0	0.0	11.2	0.1	0.0
Motor vehicles and motor vehicles equipment.....	371	0.0	0.2	35.9	0.0	0.0	0.0	37.2	36.1	37.0	35.5	0.0	13.6	0.0	0.0
Other transportation equipment.....	373-75,379	10.4	9.6	42.0	2.4	5.9	0.0	90.3	94.3	88.7	94.2	0.0	0.0	0.0	0.0
Aircraft and missiles.....	372,376	1.2	1.8	35.2	3.6	2.1	4.3	84.0	89.7	83.8	78.6	0.0	0.9	0.8	0.0
294 Professional and scientific instruments.....	38	8.9	7.6	56.5	19.8	7.1	51.2	79.5	79.4	80.9	0.0	0.0	37.7	12.7	1.0
Scientific and mechanical measuring instruments.....	381-82	14.7	11.5	60.6	30.9	11.9	52.4	79.0	79.0	81.2	63.9	0.0	53.7	13.4	0.3
Optical, surgical, photographic, and other instruments.....	384-87	3.3	3.6	47.6	3.3	3.1	12.4	80.2	80.2	80.6	53.0	0.0	13.2	12.2	1.1
Other manufacturing industries....	27,31,39	1.7	0.2	30.9	7.9	8.0	0.0	51.8	49.9	55.6	56.7	0.0	0.0	3.1	1.9
Nonmanufacturing.....		4.1	0.2	20.6	8.5	6.0	27.5	38.9	38.0	45.4	35.8	51.4	62.5	7.3	2.8
Transportation and utilities.....	40-42, 44-49	7.9	4.8	13.8	11.7	12.0	7.4	18.6	28.2	23.2	0.0	0.0	1.3	0.2	0.0
Communications.....	48	12.2	4.0	6.4	11.9	12.3	0.0	17.7	27.1	20.1	0.0	0.0	0.0	0.0	0.0
Telephone communications.....	481	12.6	4.4	6.1	12.0	12.4	0.0	17.4	26.9	20.0	12.9	0.0	0.0	0.0	0.0
Other communications.....	482-484, 489	0.0	0.2	15.9	2.8	2.8	0.0	56.5	54.3	55.0	54.9	0.0	0.0	0.0	0.0
Electric, gas, and sanitary services.....	49	4.3	4.2	65.3	7.6	10.0	6.2	40.2	36.2	37.2	35.9	0.0	1.3	0.4	0.0
Other transportation and utilities.....	40-42,44-47	6.4	6.0	45.8	21.4	8.8	100.0	59.9	55.7	55.7	58.1	0.0	0.0	0.0	0.0
		2.8	0.7	10.6	1.6	1.6	0.0	25.2	24.6	25.9	13.5	0.0	0.0	13.4	1.6

See explanatory information and SOURCE at end of table.

Table B-4. Imputation rates for selected items, by industry: 1995

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Industry	SIC code	Net sales	Total employment	R&D scientists/engineers	Total R&D			R&D by cost			R&D by state	Energy R&D	Pollution abatement	R&D outside company	Foreign R&D
					Total	Company	Federal	Wages	Materials	Other costs					
[Percent]															
Trade.....	50-59	1.0%	0.0%	30.8%	6.4%	6.5%	0.0%	91.0%	94.4%	88.5%	71.8%	0.0%	0.0%	52.3%	0.0%
Finance, insurance, and real estate.....	60-65,67														
Services.....	701,72,73, 75-81,83, 84,87,89	2.5	2.6	25.8	10.3	6.0	24.4	57.6	44.7	65.3	0.0	51.2	89.5	2.5	2.8
Business services.....	73	3.3	2.6	18.4	6.6	7.0	1.3	54.1	39.1	58.3	0.0	0.0	0.0	10.9	5.1
Computer and data processing services.....	737	4.3	4.2	18.8	6.5	6.9	0.0	53.7	38.7	58.2	54.5	0.0	0.0	11.8	5.1
Other business services....	731-736,738	0.4	1.6	8.1	11.3	13.7	8.0	76.0	68.3	79.6	72.6	0.0	0.0	0.2	0.0
Health services.....	80	1.2	1.6	8.1	0.5	1.1	14.1	2.9	1.9	5.6	0.0	0.0	0.0	0.1	0.3
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	0.0	0.0	3.6	0.0	0.0	0.0	2.0	1.3	5.4	1.3	0.0	0.0	0.1	0.0
Other health services.....	802-805, 808-809	6.1	3.3	43.7	23.3	50.4	37.8	79.5	89.8	92.4	82.8	0.0	0.0	0.0	25.2
Engineering and management services.....	87	4.1	6.7	38.9	16.0	4.9	28.3	73.8	66.6	77.1	0.0	51.4	94.4	1.7	1.1
Engineering, architectural, and surveying.....	871	0.5	1.4	48.9	1.1	1.0	1.1	89.1	87.9	88.7	80.7	2.4	0.0	0.0	0.0
Research, development, and testing.....	873	6.6	22.5	31.9	26.0	6.5	57.2	63.1	51.3	68.6	62.9	88.2	96.2	1.9	1.1
Other engineering and management services...	872,874	14.5	10.5	12.6	3.3	1.8	100.0	37.5	32.9	30.7	40.9	0.0	0.0	0.0	0.0
Other services.....	701,72, 75-79,81, 83,84,89	0.3	0.3	11.0	1.3	0.7	26.8	5.5	5.7	47.6	10.7	0.0	0.0	3.3	0.0
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	2.0	0.0	2.8	0.9	0.9	0.0	46.2	46.4	46.2	32.6	0.0	0.0	17.9	8.6

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SOURCE: National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

Table B-4a. Imputation rates for selected items, by industry: 1996

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Industry	SIC code	Net Sales	Total employment	R&D scientists/engineers	Total R&D			R&D by cost			R&D by state	Energy R&D	Pollution abatement	R&D outside company	Foreign R&D
					Total	Company	Federal	Wages	Materials	Other costs					
[Percent]															
All Industries.....		4.0%	5.1%	33.3%	8.0%	6.1%	27.0%	-	-	-	-	-	-	7.6%	16.8%
Manufacturing.....		4.5	5.8	39.7	7.0	4.3	23.9	-	-	-	-	-	-	4.5	7.9
Food, kindred, and tobacco products.....	20,21	2.8	2.9	22.9	3.2	4.7	0.0	-	-	-	-	-	-	2.8	1.3
Textiles and apparel.....	22,23	11.6	11.3	21.5	12.8	12.9	0.0	-	-	-	-	-	-	0.0	1.5
Lumber, wood products, and furniture.....	24,25	3.3	2.2	43.1	3.2	3.2	0.0	-	-	-	-	-	-	0.0	25.3
Paper and allied products.....	26	16.2	18.8	64.7	47.5	45.9	99.0	-	-	-	-	-	-	21.3	68.8
Chemicals and allied products.....	28	3.5	4.3	20.9	1.3	1.3	0.8	-	-	-	-	-	-	5.7	4.8
Industrial chemicals.....	281-82,286	1.2	1.2	26.1	1.0	1.0	0.6	-	-	-	-	-	-	0.0	0.0
Drugs and medicines.....	283	4.9	5.9	14.8	1.0	1.0	32.3	-	-	-	-	-	-	6.8	8.5
Other chemicals.....	284-85, 287-89	5.7	7.3	27.8	3.2	3.2	0.0	-	-	-	-	-	-	0.1	0.7
Petroleum refining and extraction.....	13,29	1.5	1.6	27.9	0.4	0.4	0.0	-	-	-	-	-	-	0.0	0.0
Rubber products.....	30	4.6	7.9	38.5	5.7	6.2	0.0	-	-	-	-	-	-	0.9	1.0
Stone, clay, and glass products.....	32	0.4	0.6	32.7	1.1	1.1	20.0	-	-	-	-	-	-	0.0	0.0
Primary metals.....	33	3.0	3.6	54.0	2.8	4.2	0.0	-	-	-	-	-	-	2.8	8.3
Ferrous metals and products....	331-32, 3398-99	3.2	2.9	13.3	6.6	6.7	0.0	-	-	-	-	-	-	0.0	0.0
Nonferrous metals and products.....	333-36	2.7	4.3	70.6	1.7	2.9	0.0	-	-	-	-	-	-	3.9	15.8
Fabricated metal products.....	34	5.8	4.2	27.1	3.8	4.3	0.0	-	-	-	-	-	-	0.0	1.3
Machinery.....	35	5.7	6.0	20.9	4.7	4.7	17.2	-	-	-	-	-	-	3.2	0.1
Office, computing, and accounting machines.....	357	1.9	4.1	13.7	3.2	3.2	0.1	-	-	-	-	-	-	3.0	0.0
Other machinery, except electrical.....	351-56, 358-59	7.4	6.5	28.5	7.0	7.0	30.6	-	-	-	-	-	-	3.5	0.2

See explanatory information and SOURCE at end of table.

Table B-4a. Imputation rates for selected items, by industry: 1996

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Industry	SIC code	Net Sales	Total employment	R&D scientists/engineers	Total R&D			R&D by cost			R&D by state	Energy R&D	Pollution abatement	R&D outside company	Foreign R&D
					Total	Company	Federal	Wages	Materials	Other costs					
[Percent]															
Electrical equipment.....	36	4.9%	5.4%	48.8%	3.4%	4.8%	2.3%	-	-	-	-	-	-	1.4%	2.5%
Radio and TV receiving equipment.....	365	0.9	4.9	4.6	0.9	0.9	0.0	-	-	-	-	-	-	0.0	69.2
Communication equipment.....	366	9.2	11.7	59.1	5.8	6.4	0.1	-	-	-	-	-	-	0.8	0.7
Electronic components.....	367	4.1	4.7	53.4	2.7	2.7	2.5	-	-	-	-	-	-	2.0	1.2
Other electrical equipment.....	361-64,369	4.3	3.5	18.1	3.3	10.5	5.1	-	-	-	-	-	-	0.6	4.8
Transportation equipment.....	37	2.4	4.2	53.2	7.8	1.2	18.8	-	-	-	-	-	-	0.2	0.0
Motor vehicles and motor vehicles equipment.....	371	0.1	0.2	37.2	0.4	0.4	0.0	-	-	-	-	-	-	0.2	0.0
Other transportation equipment.....	373-75,379	12.3	11.2	42.5	0.3	0.6	0.0	-	-	-	-	-	-	0.0	0.0
Aircraft and missiles.....	372,376	6.5	6.9	64.4	15.3	3.4	21.8	-	-	-	-	-	-	0.0	0.0
Professional and scientific instruments.....	38	9.9	10.6	57.4	20.7	9.8	43.2	-	-	-	-	-	-	6.8	2.5
Scientific and mechanical measuring instruments.....	381-82	16.2	13.6	63.2	30.4	13.9	44.6	-	-	-	-	-	-	1.1	3.8
Optical, surgical, photographic, and other instruments.....	384-87	4.6	7.9	45.9	7.1	7.2	5.1	-	-	-	-	-	-	7.8	2.2
Other manufacturing industries 1/.....	27,31,39	3.7	4.8	8.4	2.4	3.0	0.0	-	-	-	-	-	-	4.6	4.8
Nonmanufacturing .....		3.2	4.0	17.1	11.4	11.5	44.0	-	-	-	-	-	-	11.6	48.0
Transportation and utilities.....	40-42,44-49	3.6	5.1	13.7	12.6	12.7	8.9	-	-	-	-	-	-	0.7	0.0
Communications.....	48	0.0	2.1	6.1	13.3	13.8	0.0	-	-	-	-	-	-	0.4	0.0
Telephone communications.....	481	0.0	2.1	5.3	13.4	13.9	0.0	-	-	-	-	-	-	0.0	0.0
Other communications.....	482-484,489	0.3	2.4	29.5	9.1	9.1	0.0	-	-	-	-	-	-	50.1	0.0

See explanatory information and SOURCE at end of table.

Table B-4a. Imputation rates for selected items, by industry: 1996

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Industry	SIC code	Net Sales	Total employment	R&D scientists/engineers	Total R&D			R&D by cost			R&D by state	Energy R&D	Pollution abatement	R&D outside company	Foreign R&D
					Total	Company	Federal	Wages	Materials	Other costs					
[Percent]															
Electric, gas, and sanitary services.....	49	7.4%	12.9%	56.5%	7.1%	6.6%	11.0%	-	-	-	-	-	-	9.0%	0.0%
Other transportation and utilities.....	40-42,44-47	1.9	0.8	37.8	7.2	2.0	100.0	-	-	-	-	-	-	7.1	0.0
Trade.....	50-59	4.3	2.0	12.5	4.9	20.1	89.9	-	-	-	-	-	-	5.5	4.8
Finance, insurance, and real estate.....	60-65,67	0.9	3.3	28.1	5.3	5.1	100.0	-	-	-	-	-	-	70.6	0.0
Services.....	701,72,73, 75-81,83, 84,87,89	6.1	4.9	19.9	14.5	9.0	43.1	-	-	-	-	-	-	17.2	58.5
Business services.....	73	4.9	3.3	16.7	5.7	5.5	22.1	-	-	-	-	-	-	18.0	6.7
Computer and data processing services.....	737	5.7	8.7	17.1	5.7	5.4	23.0	-	-	-	-	-	-	18.1	6.8
Other business services.....	731-736,738	0.4	0.1	4.3	6.0	6.3	0.0	-	-	-	-	-	-	0.0	0.0
Health services.....	80	32.1	25.8	33.2	69.2	69.5	12.7	-	-	-	-	-	-	73.8	99.3
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	34.2	19.8	32.0	71.5	71.7	18.0	-	-	-	-	-	-	81.2	99.4
Other health services.....	802-805, 808-809	0.0	48.6	59.4	0.0	0.0	0.0	-	-	-	-	-	-	0.0	0.0
Engineering and management services.....	87	7.4	7.4	25.5	22.0	7.5	46.0	-	-	-	-	-	-	8.5	4.2
Engineering, architectural, and surveying.....	871	1.5	3.0	26.1	8.4	15.6	3.7	-	-	-	-	-	-	8.7	3.3
Research, development, and testing.....	873	8.8	11.1	21.4	26.8	6.2	72.0	-	-	-	-	-	-	8.5	4.4
Other engineering and management services....	872,874	17.9	0.1	64.4	2.9	2.1	5.4	-	-	-	-	-	-	0.0	0.0

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See explanatory information and SOURCE at end of table.

Table B-4a. Imputation rates for selected items, by industry: 1996

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Industry	SIC code	Net Sales	Total employment	R&D scientists/engineers	Total R&D			R&D by cost			R&D by state	Energy R&D	Pollution abatement	R&D outside company	Foreign R&D
					Total	Company	Federal	Wages	Materials	Other costs					
[Percent]															
Other services.....	701,72,75-79, 81,83,84,89	0.1%	0.1%	4.1%	6.2%	6.3%	0.0%	-	-	-	-	-	-	0.0%	92.8%
Other nonmanufacturing industries 1/.....	07-12,14,15, 161-162,17	0.8	0.8	3.0	1.2	1.6	0.0	-	-	-	-	-	-	0.0	0.0

1/ Beginning in 1996 manufacturing companies with fewer than 50 employees and nonmanufacturing companies with fewer than 15 employees were sampled separately without regard to industry classification to minimize year-to-year variation in survey estimates. Estimates for manufacturing companies in this group are combined with those for companies in "Other manufacturing industries." Estimates for nonmanufacturing companies in this group are combined with those for companies in "Other nonmanufacturing industries." As a result, statistics for "Other manufacturing industries" and for "Other nonmanufacturing industries" for 1996 are not comparable with statistics for prior years.

**KEY:** - = No data collected for these items in the 1996 Survey of Industrial Research and Development.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

**Table B-5. Item response rates—percentage of R&D-performing companies  
that responded to selected items: 1995**

Page 1 of 1

Data Item	Response rate 1/	
	Form RD-1L 2/	Form RD-1A 2/
Sales.....	97.9%	97.5%
Total employment.....	98.1	99.0
Scientist and engineers.....	75.4	85.8
Federal R&D.....	99.6	99.9
Company R&D.....	3/	3/
Total R&D.....	100.0	100.0
Foreign R&D.....	35.7	57.2
Contracted out.....	39.2	51.3
Energy R&D.....	23.4	4/
Pollution abatement R&D.....	21.8	4/

1/ Response rates are based on reported data for companies that reported total R&D expenditures. Imputed data are not included. Companies that reported that they were out of scope, out of business, merged with another company, or had no R&D expenditures for 1995 were excluded from the calculation of response rates.

2/ See technical notes for descriptions of the survey questionnaire forms.

3/ Item response for "Federal R&D" and for "Company R&D" are considered together; companies that report "Total R&D" and either of these expenditures implicitly report both company and Federal R&D, since these two items sum to total R&D.

4/ Response rates are not provided because form RD-1A does not include these items. See technical notes for more information about the contents of the questionnaire.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

**Table B-5a. Item response rates—percentage of R&D-performing companies  
that responded to selected items: 1996**

Page 1 of 1

Data Item	Response rate 1/	
	Form RD-1S 2/	Form RD-1A 2/
Sales.....	98.6%	97.6%
Total employment.....	99.1	98.0
Scientist and engineers.....	80.9	86.0
Federal R&D.....	99.6	100.0
Company R&D.....	3/	3/
Total R&D.....	100.0	100.0
Foreign R&D.....	35.1	41.6
Contracted out.....	35.9	42.6
Energy R&D.....	4/	4/
Pollution abatement R&D.....	4/	4/

1/ Response rates are based on reported data for companies that reported total R&D expenditures. Imputed data are not included. Companies that reported they were out of scope, out of business, merged with another company, or had no R&D expenditures for 1996 were excluded from the calculation of response rates.

2/ See technical notes for descriptions of the survey questionnaire forms.

3/ Item response for "Federal R&D" and for "Company R&D" are considered together; companies that report "Total R&D" and either of these expenditures implicitly report both company and Federal R&D, since these two items sum to total R&D.

4/ Response rates are not provided because forms RD-1S and RD-1A do not include these items. See technical notes for more information about the contents of the questionnaire.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996

**Table B-6. Funds for performance of basic research, applied research, development, funds not distributed, and percent of funds not distributed, by industry and source of funds: 1993**

Page 1 of 4

Industry	SIC code	Total			Basic research			Applied research		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
[Dollars in millions]										
All Industries.....		\$117,400	\$22,809	\$94,591	\$6,297	\$952	\$5,345	\$22,043	\$4,698	\$17,345
Manufacturing.....		86,569	16,669	69,901	4,090	283	3,808	15,756	2,169	13,587
Food, kindred, and tobacco products.....	20,21	1,345	0	1,345	83	0	83	374	0	374
Textiles and apparel.....	22,23	(D)	(D)	286	(D)	(D)	29	(D)	(D)	25
Lumber, wood products, and furniture.....	24,25	(D)	(D)	196	(D)	(D)	13	42	0	42
Paper and allied products.....	26	(D)	(D)	1,191	(D)	(D)	167	(D)	(D)	449
Chemicals and allied products.....	28	(D)	(D)	16,658	2,112	13	2,099	(D)	(D)	5,313
Industrial chemicals.....	281-82,286	(D)	(D)	5,165	(D)	(D)	885	(D)	(D)	1,201
Drugs and medicines.....	283	9,146	15	9,132	(D)	(D)	(D)	3,379	8	3,371
Other chemicals.....	284-85,287-89	(D)	(D)	2,361	(D)	(D)	(D)	(D)	(D)	741
Petroleum refining and extraction.....	13,29	2,152	14	2,138	(D)	(D)	(D)	(D)	(D)	(D)
Rubber products.....	30	(D)	(D)	1,059	24	0	24	(D)	(D)	130
Stone, clay, and glass products.....	32	538	9	529	(D)	(D)	49	(D)	(D)	165
Primary metals.....	33	669	23	646	(D)	(D)	43	201	6 (S)	195
Ferrous metals and products.....	331-32,3398-99	289	17	272	(D)	(D)	19	(D)	(D)	77
Nonferrous metals and products.....	333-36	380	6	374	24	0	24	(D)	(D)	118 (S)
Fabricated metal products.....	34	1,158	222	936	(D)	(D)	77	152	7	144
Machinery.....	35	8,381	86	8,295	(D)	(D)	241	(D)	(D)	1,369
Office, computing, and accounting machines.....	357	4,950	33	4,917	(D)	(D)	78	(D)	(D)	802
Other machinery, except electrical.....	351-56,358-59	3,431	53	3,378	(D)	(D)	163	(D)	(D)	568
Electrical equipment.....	36	13,349	1,667	11,682	(D)	(D)	258	(D)	(D)	2,027
Radio and TV receiving equipment.....	365	(D)	(D)	87	9	0	9	(D)	(D)	11
Communication equipment.....	366	(D)	(D)	3,954	(D)	(D)	(D)	342	0	342
Electronic components.....	367	5,311	206	5,105	(D)	1	(D)	959	35 (S)	925
Other electrical equipment.....	361-64,369	(D)	(D)	2,537	(D)	(D)	97	(D)	(D)	749
Transportation equipment.....	37	27,258	10,617	16,640	(D)	(D)	116	1,893	887	1,006
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	10,659	(D)	(D)	74	(D)	(D)	460
Other transportation equipment.....	373-75,379	(D)	(D)	297	(D)	0	(D)	(D)	(D)	7
Aircraft and missiles.....	372,376	15,056	9,372	5,684	(D)	(D)	(D)	1,345	807	539
Professional and scientific instruments.....	38	10,119	2,577	7,542	(D)	(D)	369	1,957	295	1,661
Scientific and mechanical measuring instruments.....	381-82	5,681	2,484	3,196	(D)	(D)	129	1,338	275	1,063
Optical, surgical, photographic, and other instruments.....	384-87	4,438	92	4,346	(D)	(D)	240	619	21	598

See explanatory information and SOURCE at end of table.

**Table B-6. Funds for performance of basic research, applied research, development, funds not distributed, and percent of funds not distributed, by industry and source of funds: 1993**

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Industry	SIC code	Total			Basic research			Applied research		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
[Dollars in millions]										
Other manufacturing industries.....	27,31,39	(D)	(D)	\$758	(D)	(D)	\$120	\$69	\$0	\$69
Nonmanufacturing 1/.....		\$30,831	\$6,140	24,690	\$2,207	\$669	1,537	6,287	2,529	3,758
Transportation and utilities.....	40-42,44-49	NA	NA	NA	NA	NA	NA	NA	NA	NA
Communications.....	48	NA	NA	NA	NA	NA	NA	NA	NA	NA
Telephone communications.....	481	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other communications.....	482-484,489	NA	NA	NA	NA	NA	NA	NA	NA	NA
Electric, gas, and sanitary services.....	49	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other transportation and utilities.....	40-42,44-47	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trade.....	50-59	NA	NA	NA	NA	NA	NA	NA	NA	NA
Finance, insurance, and real estate.....	60-65,67	NA	NA	NA	NA	NA	NA	NA	NA	NA
Services.....	701,72,73,75-81, 83,84,87,89	NA	NA	NA	NA	NA	NA	NA	NA	NA
Business services.....	73	NA	NA	NA	NA	NA	NA	NA	NA	NA
Computer and data processing services.....	737	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other business services.....	731-736,738	NA	NA	NA	NA	NA	NA	NA	NA	NA
Health services.....	80	NA	NA	NA	NA	NA	NA	NA	NA	NA
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other health services.....	802-805,808-809	NA	NA	NA	NA	NA	NA	NA	NA	NA
Engineering and management services.....	87	NA	NA	NA	NA	NA	NA	NA	NA	NA
Engineering, architectural, and surveying.....	871	NA	NA	NA	NA	NA	NA	NA	NA	NA
Research, development, and testing.....	873	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other engineering and management services.....	872,874	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other services.....	701,72,75-79,81, 83,84,89	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	NA	NA	NA	NA	NA	NA	NA	NA	NA

See explanatory information and SOURCE at end of table.

**Table B-6. Funds for performance of basic research, applied research, development, funds not distributed, and percent of funds not distributed, by industry and source of funds: 1993**

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Industry	SIC code	Development			Expenditures not distributed			Percent of expenditures not distributed		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
[Dollars in millions]										
All Industries.....		\$77,552	\$16,561	\$60,991	\$11,507	\$597	\$10,910	9.8%	2.6%	11.5%
Manufacturing.....		56,233	13,632	42,601	10,489	584	9,905	NA	NA	NA
Food, kindred, and tobacco products.....	20,21	701	0	701	188	0	188	14.0	0.0	14.0
Textiles and apparel.....	22,23	(D)	(D)	142	(D)	(D)	89	33.0	71.4	31.1
Lumber, wood products, and furniture.....	24,25	(D)	(D)	116	(D)	(D)	24	12.1	0.0	12.2
Paper and allied products.....	26	389	0	389	187	0	187	(D)	(D)	15.7
Chemicals and allied products.....	28	(D)	(D)	7,949	(D)	(D)	1,296	7.2	0.1	7.8
Industrial chemicals.....	281-82,286	(D)	(D)	2,856	(D)	(D)	222 (S)	3.4	0.1	4.3
Drugs and medicines.....	283	(D)	(D)	(D)	(D)	0	(D)	(D)	(D)	(D)
Other chemicals.....	284-85,287-89	(D)	(D)	(D)	(D)	(D)	(D)	5.4	(D)	(D)
Petroleum refining and extraction.....	13,29	751	11	740	(D)	0	(D)	(D)	0.0	(D)
Rubber products.....	30	(D)	(D)	708	197	0	197	(D)	(D)	18.6
Stone, clay, and glass products.....	32	276	4	272	(D)	(D)	43	(D)	(D)	8.1
Primary metals.....	33	(D)	(D)	358	50 (S)	0	50 (S)	7.5	0.0	7.7
Ferrous metals and products.....	331-32,3398-99	(D)	(D)	147	29 (S)	0	29 (S)	10.0	0.0	10.7
Nonferrous metals and products.....	333-36	(D)	(D)	211	21	0	21	5.5	0.0	5.6
Fabricated metal products.....	34	(D)	(D)	507	(D)	(D)	208	(D)	(D)	22.2
Machinery.....	35	5,481	62	5,419	(D)	(D)	1,266 (S)	15.2	4.7	15.3
Office, computing, and accounting machines.....	357	3,300	28	3,272	766 (S)	0	766 (S)	15.5	0.0	15.6
Other machinery, except electrical.....	351-56,358-59	2,181	34	2,147	(D)	(D)	500	(D)	(D)	14.8
Electrical equipment.....	36	6,640	1,080	5,560	(D)	(D)	3,837	(D)	(D)	32.8
Radio and TV receiving equipment.....	365	(D)	(D)	58	9	0	9	(D)	(D)	10.3
Communication equipment.....	366	(D)	(D)	(D)	(D)	(D)	(D)	40.6	41.1	(D)
Electronic components.....	367	(D)	171	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Other electrical equipment.....	361-64,369	(D)	(D)	1,213	(D)	(D)	478	15.0	0.2	18.8
Transportation equipment.....	37	(D)	(D)	14,503	(D)	(D)	1,016	(D)	(D)	6.1
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	10,080	45	0	45	(D)	(D)	0.4
Other transportation equipment.....	373-75,379	(D)	(D)	(D)	(D)	0	(D)	11.0	0.0	(D)
Aircraft and missiles.....	372,376	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)	(D)
Professional and scientific instruments.....	38	7,063	2,257	4,806	(D)	(D)	706	(D)	(D)	9.4
Scientific and mechanical measuring instruments.....	381-82	(D)	(D)	1,746	(D)	(D)	258 (S)	(D)	(D)	8.1
Optical, surgical, photographic, and other instruments.....	384-87	(D)	(D)	3,060	448	0	448	10.1	0.0	10.3

**Table B-6. Funds for performance of basic research, applied research, development, funds not distributed, and percent of funds not distributed, by industry and source of funds: 1993**

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Industry	SIC code	Development			Expenditures not distributed			Percent of expenditures not distributed		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
		[Dollars in millions]								
Other manufacturing industries.....	27,31,39	(D)	(D)	\$431	\$139	\$0	\$139	(D)	(D)	18.3%
Nonmanufacturing.....		\$21,319	\$2,929	18,390	1,018	13	1,005	3.3%	0.2%	4.1
Transportation and utilities.....	40-42,44-49	NA	NA	NA	NA	NA	NA	NA	NA	NA
Communications.....	48	NA	NA	NA	NA	NA	NA	NA	NA	NA
Telephone communications.....	481	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other communications.....	482-484,489	NA	NA	NA	NA	NA	NA	NA	NA	NA
Electric, gas, and sanitary services.....	49	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other transportation and utilities.....	40-42,44-47	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trade.....	50-59	NA	NA	NA	NA	NA	NA	NA	NA	NA
Finance, insurance, and real estate.....	60-65,67	NA	NA	NA	NA	NA	NA	NA	NA	NA
Services.....	701,72,73,75-81, 83,84,87,89	NA	NA	NA	NA	NA	NA	NA	NA	NA
Business services.....	73	NA	NA	NA	NA	NA	NA	NA	NA	NA
Computer and data processing services.....	737	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other business services.....	731-736,738	NA	NA	NA	NA	NA	NA	NA	NA	NA
Health services.....	80	NA	NA	NA	NA	NA	NA	NA	NA	NA
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other health services.....	802-805,808-809	NA	NA	NA	NA	NA	NA	NA	NA	NA
Engineering and management services.....	87	NA	NA	NA	NA	NA	NA	NA	NA	NA
Engineering, architectural, and surveying.....	871	NA	NA	NA	NA	NA	NA	NA	NA	NA
Research, development, and testing.....	873	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other engineering and management services.....	872,874	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other services.....	701,72,75-79,81, 83,84,89	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	NA	NA	NA	NA	NA	NA	NA	NA	NA

1/ Until 1995, data were not broken down below this level of detail for most nonmanufacturing industries.

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

NA = Not available.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1993

**Table B-7. Funds for performance of basic research, applied research, development, funds not distributed, and percent of funds not distributed, by industry and source of funds: 1994**

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Industry	SIC code	Total			Basic research			Applied research		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
[Dollars in millions]										
All Industries.....		\$119,595	\$22,463	\$97,131	\$6,374	\$921	\$5,453	\$20,934	\$4,040	\$16,894
Manufacturing.....		90,749	17,373	73,375	4,413	241	4,172	14,991	2,033	12,959
Food, kindred, and tobacco products.....	20,21	1,476	0	1,476	101	0	101	419	0	419
Textiles and apparel.....	22,23	(D)	(D)	316	(D)	(D)	27	(D)	(D)	32
Lumber, wood products, and furniture.....	24,25	(D)	(D)	201	(D)	(D)	23	(D)	(D)	37
Paper and allied products.....	26	(D)	(D)	1,263	(D)	(D)	175	(D)	(D)	507
Chemicals and allied products.....	28	(D)	(D)	16,559	2,405	9	2,396	(D)	(D)	4,896
Industrial chemicals.....	281-82,286	(D)	(D)	4,780	(D)	(D)	1,030	(D)	(D)	(D)
Drugs and medicines.....	283	9,633	8	9,625	(D)	1	(D)	2,959	5	2,954
Other chemicals.....	284-85,287-89	(D)	(D)	2,154	(D)	(D)	(D)	(D)	(D)	(D)
Petroleum refining and extraction.....	13,29	1,950	10	1,939	(D)	0	(D)	464	6	459
Rubber products.....	30	(D)	(D)	1,432	25	0	25	(D)	(D)	145
Stone, clay, and glass products.....	32	591	38	553	47	0	47	200	37	163
Primary metals.....	33	690	17	672	(D)	(D)	92	(D)	(D)	187
Ferrous metals and products.....	331-32,3398-99	(D)	(D)	241	(D)	(D)	17	(D)	(D)	77
Nonferrous metals and products.....	333-36	(D)	(D)	431	75	0	75	(D)	(D)	110
Fabricated metal products.....	34	1,111	243	868	(D)	(D)	69	(D)	(D)	162
Machinery.....	35	8,110	99	8,011	235	7	228	1,351	36	1,316
Office, computing, and accounting machines.....	357	4,106	28	4,078	(D)	(D)	60	(D)	(D)	692
Other machinery, except electrical.....	351-56,358-59	4,004	71	3,933	(D)	(D)	169	(D)	(D)	624
Electrical equipment.....	36	15,338	1,801	13,537	(D)	(D)	272	(D)	(D)	1,732
Radio and TV receiving equipment.....	365	(D)	(D)	64	(D)	(D)	(D)	(D)	0	(D)
Communication equipment.....	366	(D)	(D)	4,939	(D)	(D)	(D)	(D)	(D)	(D)
Electronic components.....	367	6,032	162	5,870	(D)	(D)	80	(D)	(D)	908
Other electrical equipment.....	361-64,369	(D)	(D)	2,664	(D)	(D)	97	(D)	(D)	410
Transportation equipment.....	37	28,087	10,392	17,695	228	102	126	1,926	739 (S)	1,186
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	11,950	(D)	(D)	(D)	(D)	(D)	(D)
Other transportation equipment.....	373-75,379	(D)	(D)	279	27	0	27	(D)	(D)	(D)
Aircraft and missiles.....	372,376	14,260	8,794	5,466	(D)	(D)	(D)	(D)	(D)	(D)
Professional and scientific instruments.....	38	11,441	3,384	8,058	(D)	(D)	415	1,901	298	1,603
Scientific and mechanical measuring instruments.....	381-82	6,952	3,266	3,687	(D)	(D)	172	1,292	270	1,021
Optical, surgical, photographic, and other instruments.....	384-87	4,489	118	4,371	(D)	(D)	243	610	28	582

**Table B-7. Funds for performance of basic research, applied research, development, funds not distributed, and percent of funds not distributed, by industry and source of funds: 1994**

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Industry	SIC code	Total			Basic research			Applied research		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
[Dollars in millions]										
Other manufacturing industries.....	27,31,39	(D)	(D)	\$796	(D)	(D)	\$83	\$116	\$0	\$116
Nonmanufacturing.....		\$28,846	\$5,090	23,756	\$1,961	\$680	1,281	5,943	2,007	3,935
Transportation and utilities.....	40-42,44-49	NA	NA	NA	NA	NA	NA	NA	NA	NA
Communications.....	48	NA	NA	NA	NA	NA	NA	NA	NA	NA
Telephone communications.....	481	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other communications.....	482-484,489	NA	NA	NA	NA	NA	NA	NA	NA	NA
Electric, gas, and sanitary services.....	49	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other transportation and utilities.....	40-42,44-47	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trade.....	50-59	NA	NA	NA	NA	NA	NA	NA	NA	NA
Finance, insurance, and real estate.....	60-65,67	NA	NA	NA	NA	NA	NA	NA	NA	NA
Services.....	701,72,73,75-81, 83,84,87,89	NA	NA	NA	NA	NA	NA	NA	NA	NA
Business services.....	73	NA	NA	NA	NA	NA	NA	NA	NA	NA
Computer and data processing services.....	737	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other business services.....	731-736,738	NA	NA	NA	NA	NA	NA	NA	NA	NA
Health services.....	80	NA	NA	NA	NA	NA	NA	NA	NA	NA
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other health services.....	802-805,808-809	NA	NA	NA	NA	NA	NA	NA	NA	NA
Engineering and management services.....	87	NA	NA	NA	NA	NA	NA	NA	NA	NA
Engineering, architectural, and surveying.....	871	NA	NA	NA	NA	NA	NA	NA	NA	NA
Research, development, and testing.....	873	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other engineering and management services....	872,874	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other services.....	701,72,75-79,81, 83,84,89	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	NA	NA	NA	NA	NA	NA	NA	NA	NA

See explanatory information and SOURCE at end of table.

**Table B-7. Funds for performance of basic research, applied research, development, funds not distributed, and percent of funds not distributed, by industry and source of funds: 1994**

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Industry	SIC code	Development			Expenditures not distributed			Percent of expenditures not distributed		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
[Dollars in millions]										
All Industries.....		\$79,937	\$16,217	\$63,719	\$12,350	\$1,285	(S)	\$11,065	0.0%	0.1%
Manufacturing.....		60,052	13,883	46,167	11,293	1,216	10,077	0.0	0.0	0.0
Food, kindred, and tobacco products.....	20,21	788	0	788	168	0	168	11.4	0.0	11.4
Textiles and apparel.....	22,23	(D)	(D)	153	(D)	(D)	104 (S)	34.9	75.0	32.9
Lumber, wood products, and furniture.....	24,25	(D)	(D)	113	27	0	27	(D)	(D)	13.4
Paper and allied products.....	26	360	0	360	221	0	221	(D)	(D)	17.5
Chemicals and allied products.....	28	8,458	610	7,848	(D)	(D)	1,419	8.0	0.1	8.6
Industrial chemicals.....	281-82,286	(D)	(D)	(D)	(D)	(D)	202 (S)	3.4	0.1	4.2
Drugs and medicines.....	283	(D)	2	(D)	(D)	0	(D)	(D)	(D)	(D)
Other chemicals.....	284-85,287-89	(D)	(D)	(D)	138	0	138	(D)	(D)	6.4
Petroleum refining and extraction.....	13,29	(D)	5	(D)	(D)	0	(D)	(D)	0.0	(D)
Rubber products.....	30	894	0	894	369	0	369	(D)	(D)	25.8
Stone, clay, and glass products.....	32	310	1	308	35	0	35	5.9	0.0	6.3
Primary metals.....	33	(D)	(D)	329	65	0	65	9.4	0.0	9.7
Ferrous metals and products.....	331-32,3398-99	(D)	(D)	126	21 (S)	0	21 (S)	(D)	(D)	8.7
Nonferrous metals and products.....	333-36	(D)	(D)	203	44	0	44	(D)	(D)	10.2
Fabricated metal products.....	34	739	205	534	(D)	(D)	103	(D)	(D)	11.9
Machinery.....	35	5,906	57	5,849	617	0	617	7.5	0.0	7.6
Office, computing, and accounting machines.....	357	3,217	13	3,204	122 (S)	0	122 (S)	3.0	0.0	3.0
Other machinery, except electrical.....	351-56,358-59	2,689	43	2,646	495	0	495	12.2	0.0	12.4
Electrical equipment.....	36	8,089	1,051 (S)	7,038	(D)	(D)	4,495	(D)	(D)	33.2
Radio and TV receiving equipment.....	365	34	0	34	(D)	(D)	4	(D)	(D)	6.3
Communication equipment.....	366	(D)	(D)	2,529	(D)	(D)	(D)	(D)	(D)	(D)
Electronic components.....	367	3,013	150	2,864	(D)	0	(D)	(D)	(D)	(D)
Other electrical equipment.....	361-64,369	(D)	(D)	1,612	(D)	(D)	545	17.2	0.6	20.5
Transportation equipment.....	37	24,650	8,989	15,662	1,284	563	721	4.6	5.4	4.1
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	(D)	69	0	69	(D)	(D)	0.6
Other transportation equipment.....	373-75,379	(D)	(D)	(D)	(D)	0	(D)	(D)	(D)	28.7
Aircraft and missiles.....	372,376	11,770	7,468	4,302	(D)	563	(D)	8.0	6.4	10.4
Professional and scientific instruments.....	38	(D)	(D)	5,032	(D)	(D)	1,007	(D)	(D)	12.5
Scientific and mechanical measuring instruments.....	381-82	(D)	(D)	1,929	(D)	(D)	564 (S)	(D)	(D)	15.3
Optical, surgical, photographic, and other instruments.....	384-87	(D)	(D)	3,103	443	0	443	9.9	0.0	10.1

**Table B-7. Funds for performance of basic research, applied research, development, funds not distributed, and percent of funds not distributed, by industry and source of funds: 1994**

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Industry	SIC code	Development			Expenditures not distributed			Percent of expenditures not distributed		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
[Dollars in millions]										
Other manufacturing industries.....	27,31,39	(D)	(D)	\$515	\$81	\$0	\$81	(D)	(D)	10.2%
Nonmanufacturing.....		\$19,885	\$2,334 (S)	17,552	1,057	69	988	0.0%	0.0%	0.0
Transportation and utilities.....	40-41,44-49	NA	NA	NA	NA	NA	NA	NA	NA	NA
Communications.....	48	NA	NA	NA	NA	NA	NA	NA	NA	NA
Telephone communications.....	481	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other communications.....	482-484,489	NA	NA	NA	NA	NA	NA	NA	NA	NA
Electric, gas, and sanitary services.....	49	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other transportation and utilities.....	40-42,44-47	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trade.....	50-59	NA	NA	NA	NA	NA	NA	NA	NA	NA
Finance, insurance, and real estate.....	60-65,67	NA	NA	NA	NA	NA	NA	NA	NA	NA
Services.....	701,72,73,75-81, 83,84,87,89	NA	NA	NA	NA	NA	NA	NA	NA	NA
Business services.....	73	NA	NA	NA	NA	NA	NA	NA	NA	NA
Computer and data processing services.....	737	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other business services.....	731-736,738	NA	NA	NA	NA	NA	NA	NA	NA	NA
Health services.....	80	NA	NA	NA	NA	NA	NA	NA	NA	NA
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other health services.....	802-805,808-809	NA	NA	NA	NA	NA	NA	NA	NA	NA
Engineering and management services.....	87	NA	NA	NA	NA	NA	NA	NA	NA	NA
Engineering, architectural, and surveying.....	871	NA	NA	NA	NA	NA	NA	NA	NA	NA
Research, development, and testing.....	873	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other engineering and management services....	872,874	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other services.....	701,72,75-79,81, 83,84,89	NA	NA	NA	NA	NA	NA	NA	NA	NA
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	NA	NA	NA	NA	NA	NA	NA	NA	NA

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

NA = Not available.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1994

**Table B-8. Funds for performance of basic research, applied research, development, funds not distributed, and percent of funds not distributed, by industry, size of company, and source of funds: 1995**

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Industry and size of company	SIC code	Total			Basic research			Applied research		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
[Dollars in millions]										
All Industries.....		\$132,103	\$23,451	\$108,652	\$5,093	\$511	\$4,581	\$22,470	\$2,725	\$19,744
Distribution by industry:										
Manufacturing.....		100,067	18,831	81,236	3,086	207	2,879	16,154	1,575	14,579
Food, kindred, and tobacco products.....	20,21	1,566	0	1,566	136	0	136	453	0	453
Textiles and apparel.....	22,23	(D)	(D)	381	22	0	22	(D)	(D)	37
Lumber, wood products, and furniture.....	24,25	(D)	(D)	229	17	0	17	31	0	31
Paper and allied products.....	26	(D)	(D)	1,404	193 (S)	0	193 (S)	(D)	(D)	556 (S)
Chemicals and allied products.....	28	17,547	210 (S)	17,337	(D)	(D)	1,225	(D)	(D)	4,348
Industrial chemicals.....	281-82,286	(D)	(D)	5,139	(D)	(D)	426	(D)	(D)	1,191
Drugs and medicines.....	283	10,215	14	10,202	720	2	718	2,484	5	2,479
Other chemicals.....	284-85,287-89	(D)	(D)	1,996	(D)	(D)	81	(D)	(D)	678
Petroleum refining and extraction.....	13,29	1,760	6	1,754	84	0	84	(D)	(D)	523
Rubber products.....	30	(D)	(D)	1,210	55	0	55	(D)	(D)	174
Stone, clay, and glass products.....	32	448	6	441	15	0	15	(D)	(D)	136
Primary metals.....	33	593	13	580	30	0	30	(D)	(D)	134
Ferrous metals and products.....	331-32,3398-99	(D)	(D)	217	13	0	13	77	0	77
Nonferrous metals and products.....	333-36	(D)	(D)	363	18	0	18	(D)	(D)	57
Fabricated metal products.....	34	1,023	86	937	(D)	(D)	60	138	9	128
Machinery.....	35	(D)	(D)	9,676	(D)	(D)	220	2,153	27	2,126
Office, computing, and accounting machines.....	357	(D)	(D)	4,699	(D)	(D)	22	(D)	(D)	1,227
Other machinery, except electrical.....	351-56,358-59	5,041	64	4,976	(D)	(D)	198	(D)	(D)	899
Electrical equipment.....	36	18,751	1,690	17,060	(D)	(D)	178	(D)	(D)	2,229
Radio and TV receiving equipment.....	365	(D)	(D)	114	4	0	4	13	0	13
Communication equipment.....	366	(D)	(D)	3,845	48	0	48	(D)	(D)	568
Electronic components.....	367	(D)	(D)	9,628	(D)	(D)	50	1,207	33	1,174
Other electrical equipment.....	361-64,369	(D)	(D)	3,473	(D)	(D)	76	(D)	(D)	474
Transportation equipment.....	37	32,441	13,130	19,311	280	180	100	2,248	548	1,700
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	13,590	(D)	(D)	(D)	(D)	(D)	(D)
Other transportation equipment.....	373-75,379	(D)	(D)	232	(D)	(D)	(D)	(D)	(D)	(D)
Aircraft and missiles.....	372,376	16,951	11,462	5,489	185	180	5	1,459	406	1,052
Professional and scientific instruments.....	38	11,976	3,460 (S)	8,516	(D)	(D)	472	(D)	(D)	1,929
Scientific and mechanical measuring instruments...	381-82	7,146	3,358 (S)	3,787	(D)	(D)	252	(D)	(D)	1,373
Optical, surgical, photographic, and other instruments.....	384-87	4,831	102	4,729	(D)	(D)	220	579	23	556
Other manufacturing industries .....	27,31,39	(D)	(D)	835	(D)	(D)	71	73	0	73

**Table B-8. Funds for performance of basic research, applied research, development, funds not distributed, and percent of funds not distributed, by industry, size of company, and source of funds: 1995**

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Industry and size of company	SIC code	Total			Basic research			Applied research		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
[Dollars in millions]										
Distribution by industry:										
Nonmanufacturing.....		\$32,036	\$4,620	\$27,415	\$2,006	\$304	\$1,702	\$6,316	\$1,150	\$5,166
Transportation and utilities.....	40-42,44-49	5,435	252	5,183	(D)	(D)	106	(D)	(D)	938
Communications.....	48	(D)	(D)	4,756	(D)	0	(D)	(D)	0	(D)
Telephone communications.....	481	(D)	(D)	4,697	(D)	0	(D)	(D)	0	(D)
Other communications.....	482-484,489	59	0	59	(D)	0	(D)	(D)	0	(D)
Electric, gas, and sanitary services.....	49	440	93	347	(D)	(D)	43	(D)	(D)	93
Other transportation and utilities.....	40-42,44-47	(D)	(D)	80	(D)	0	(D)	(D)	(D)	(D)
Trade.....	50-59	(D)	(D)	7,514	(D)	(D)	207	(D)	(D)	1,213
Finance, insurance, and real estate.....	60-65,67	(D)	(D)	710	(D)	(D)	115	(D)	(D)	16
Services.....	701,72,73,75-81, 83,84,87,89	17,876	4,270	13,606	1,537	294	1,243	3,979	1,129	2,850
Business services.....	73	9,293	612	8,681	(D)	(D)	(D)	(D)	(D)	(D)
Computer and data processing services.....	737	9,059	514	8,545	(D)	(D)	550	(D)	(D)	1,338
Other business services.....	731-736,738	234	98	136	(D)	(D)	(D)	(D)	(D)	(D)
Health services.....	80	756	4	753	(D)	(D)	(D)	237	3	235
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	(D)	(D)	737	(D)	(D)	(D)	(D)	(D)	(D)
Other health services.....	802-805,808-809	(D)	(D)	16 (S)	1	(D)	(D)	(D)	(D)	(D)
Engineering and management services.....	87	7,662	3,650	4,011	(D)	(D)	(D)	(D)	(D)	(D)
Engineering, architectural, and surveying.....	871	2,933	1,883	1,050	(D)	(D)	(D)	(D)	(D)	(D)
Research, development, and testing.....	873	(D)	(D)	2,829	(D)	(D)	(D)	(D)	(D)	(D)
Other engineering and management services...	872,874	(D)	(D)	132	(D)	(D)	7	(D)	(D)	0
Other services.....	701,72,75-79,81, 83,84,89	165	4	160	(D)	(D)	(D)	29	3	26
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	413	11	402	31	0	31	(D)	(D)	148

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See explanatory information and SOURCE at end of table.

**Table B-8. Funds for performance of basic research, applied research, development, funds not distributed, and percent of funds not distributed, by industry, size of company, and source of funds: 1995**

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Industry and size of company	SIC code	Total			Basic research			Applied research		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
[Dollars in millions]										
Distribution by size of company: [Number of employees]										
Total.....		\$132,103	\$23,451	\$108,652	\$5,093	\$511	\$4,581	\$22,470	\$2,725	\$19,744
Fewer than 500.....		16,662	1,978	14,684	1,872	272	1,600	4,457	789	3,668
500 to 999.....		4,693	225	4,468	(D)	(D)	266	(D)	(D)	1,121
1,000 to 4,999.....		16,960	798	16,162	1,263	26 (S)	1,237	3,220	42	3,177
5,000 to 9,999.....		9,532	243	9,289	(D)	(D)	187	2,203	60 (S)	2,143
10,000 to 24,999.....		17,071	1,946 (S)	15,125	559	3	556	(D)	(D)	2,351
25,000 or more.....		67,185	18,261	48,924	922	186	736	8,638	1,354	7,284

See explanatory information and SOURCE at end of table.

**Table B-8. Funds for performance of basic research, applied research, development, funds not distributed, and percent of funds not distributed, by industry, size of company, and source of funds: 1995**

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Industry and size of company	SIC code	Development			Expenditures not distributed			Percent of expenditures not distributed		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
		[Dollars in millions]						[Percent]		
All Industries.....		\$83,616	\$14,679	\$68,938	\$20,925	\$5,536	\$15,388	16.0%	24.0%	14.0%
Distribution by industry:										
Manufacturing.....		62,201	12,746	49,455	18,626	4,302	14,324	19.0	23.0	18.0
Food, kindred, and tobacco products.....	20,21	803	0	803	174	0	174	11.0	0.0	11.0
Textiles and apparel.....	22,23	(D)	(D)	228	(D)	(D)	94	(D)	(D)	25.0
Lumber, wood products, and furniture.....	24,25	(D)	(D)	136	(D)	(D)	45	(D)	(D)	20.0
Paper and allied products.....	26	345	0	345	(D)	(D)	310	(D)	(D)	22.0
Chemicals and allied products.....	28	7,936	186 (S)	7,750	(D)	(D)	4,013	(D)	(D)	23.0
Industrial chemicals.....	281-82,286	(D)	(D)	2,619	(D)	(D)	903	(D)	(D)	18.0
Drugs and medicines.....	283	4,018	7	4,011	2,994	0	2,994	29.0	0.0	29.0
Other chemicals.....	284-85,287-89	(D)	(D)	1,119	(D)	(D)	117	(D)	(D)	6.0
Petroleum refining and extraction.....	13,29	(D)	(D)	669	(D)	0	478 (D)	(D)	0.0	(D)
Rubber products.....	30	(D)	(D)	753	(D)	(D)	228	(D)	(D)	19.0
Stone, clay, and glass products.....	32	(D)	(D)	249	41	0	41 (D)	9.0	0.0	9.0
Primary metals.....	33	(D)	(D)	236	(D)	(D)	179	(D)	(D)	31.0
Ferrous metals and products.....	331-32,3398-99	(D)	(D)	108	(D)	(D)	19 (D)	(D)	(D)	(D)
Nonferrous metals and products.....	333-36	130	2	128	(D)	(D)	160 (D)	45.0	64.0	(D)
Fabricated metal products.....	34	(D)	(D)	654	(D)	(D)	95	(D)	(D)	10.0
Machinery.....	35	6,209	48	6,162	(D)	(D)	1,168	12.0	10.0	12.0
Office, computing, and accounting machines.....	357	(D)	(D)	3,111 (S)	(D)	(D)	339	(D)	(D)	7.0
Other machinery, except electrical.....	351-56,358-59	(D)	(D)	3,051	(D)	(D)	829	(D)	(D)	17.0
Electrical equipment.....	36	9,689	446	9,243	(D)	(D)	5,410	(D)	(D)	32.0
Radio and TV receiving equipment.....	365	(D)	(D)	78	(D)	(D)	18	(D)	(D)	16.0
Communication equipment.....	366	3,119	52	3,067	(D)	(D)	162 (D)	14.0	90.0	(D)
Electronic components.....	367	3,820	13	3,807	(D)	(D)	4,598 (D)	50.0	92.0	(D)
Other electrical equipment.....	361-64,369	(D)	(D)	2,292	(D)	(D)	631	16.0	0.0	18.0
Transportation equipment.....	37	25,250	9,192	16,057	4,663	3,211	1,453	14.0	24.0	8.0
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	12,807	(D)	(D)	83	(D)	(D)	1.0
Other transportation equipment.....	373-75,379	(D)	(D)	118	(D)	(D)	72	14.0	1.0	31.0
Aircraft and missiles.....	372,376	10,802	7,669	3,133	4,504	3,206	1,298	27.0	28.0	24.0
Professional and scientific instruments.....	38	8,384	2,795 (S)	5,589	(D)	(D)	526	(D)	(D)	6.0
Scientific and mechanical measuring instruments..	381-82	(D)	(D)	2,052	(D)	(D)	110 (S)	(D)	(D)	3.0
Optical, surgical, photographic, and other instruments.....	384-87	(D)	(D)	3,537	(D)	(D)	416	(D)	(D)	9.0
Other manufacturing industries.....	27,31,39	581	0	581	(D)	(D)	110	(D)	(D)	13.0

See explanatory information and SOURCE at end of table.

**Table B-8. Funds for performance of basic research, applied research, development, funds not distributed, and percent of funds not distributed, by industry, size of company, and source of funds: 1995**

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Industry and size of company	SIC code	Development			Expenditures not distributed			Percent of expenditures not distributed		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
[Dollars in millions]										
Distribution by industry:										
Nonmanufacturing.....		\$21,415	\$1,932	\$19,483	\$2,299	\$1,234	\$1,065	7.0%	27.0%	4.0%
Transportation and utilities.....	40-41,44-49	4,285	232	4,053	(D)	(D)	85	(D)	(D)	2.0
Communications.....	48	(D)	(D)	3,849	(D)	0	(D)	0.0	0.0	0.0
Telephone communications.....	481	(D)	(D)	3,809	0	0	0	0.0	0.0	0.0
Other communications.....	482-484,489	41	0	41	(D)	0	(D)	(D)	0.0	(D)
Electric, gas, and sanitary services.....	49	250	86	163	(D)	0	48	11.0	0.0	14.0
Other transportation and utilities.....	40-42,44-47	(D)	(D)	40	(D)	(D)	(D)	51.0	100.0	(D)
Trade.....	50-59	(D)	(D)	5,956	(D)	(D)	139	(D)	(D)	2.0
Finance, insurance, and real estate.....	60-65,67	(D)	(D)	575	(D)	(D)	4	(D)	(D)	1.0
Services.....	701,72,73,75-81, 83,84,87,89	10,315	1,626	8,690	2,045	1,221	823	11.0	29.0	6.0
Business services.....	73	6,691	258	6,434	(D)	(D)	(D)	(D)	(D)	(D)
Computer and data processing services.....	737	6,533	178	6,355	(D)	(D)	301	(D)	(D)	4.0
Other business services.....	731-736,738	158	80	78	(D)	0	(D)	(D)	0.0	(D)
Health services.....	80	(D)	(D)	(D)	0	0	0	0.0	0.0	0.0
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	(D)	(D)	(D)	0	0	0	0.0	0.0	0.0
Other health services.....	802-805,808-809	7	0	7	0	0	0	0.0	0.0	0.0
Engineering and management services.....	87	3,031	1,367 (S)	1,664	(D)	(D)	498	(D)	(D)	12.0
Engineering, architectural, and surveying.....	871	799	482	317	(D)	(D)	(D)	(D)	(D)	(D)
Research, development, and testing.....	873	(D)	(D)	1,222	(D)	(D)	(D)	6.0	7.0	(D)
Other engineering and management services...	872,874	(D)	(D)	125	0	0	0	0.0	0.0	0.0
Other services.....	701,72,75-79,81, 83,84,89	(D)	(D)	(D)	(D)	0	(D)	(D)	0.0	(D)
Other nonmanufacturing industries.....	07-12,14,15, 161-162,17	(D)	(D)	209	13	0	13	3.0	0.0	3.0

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See explanatory information and SOURCE at end of table.

**Table B-8. Funds for performance of basic research, applied research, development, funds not distributed, and percent of funds not distributed, by industry, size of company, and source of funds: 1995**

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Industry and size of company	SIC code	Development			Expenditures not distributed			Percent of expenditures not distributed		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
Distribution by size of company: [Number of employees]		[Dollars in millions]							[Percent]	
Total.....		\$83,616	\$14,679	\$68,938	\$20,925	\$5,536	\$15,388	16.0%	24.0%	14.0%
Fewer than 500.....		9,406	847	8,559	926	69	857	6.0	3.0	6.0
500 to 999.....		2,907	156	2,751	(D)	(D)	330 (S)	(D)	(D)	7.0
1,000 to 4,999.....		10,617	633	9,984	1,860	96	1,764	11.0	12.0	11.0
5,000 to 9,999.....		6,444	153 (S)	6,291	(D)	(D)	669	(D)	(D)	7.0
10,000 to 24,999.....		10,386	1,377 (S)	9,009	(D)	(D)	3,209	(D)	(D)	21.0
25,000 or more.....		43,856	11,513	32,343	13,768	5,208	8,560	20.0	29.0	17.0

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.

(S) = Indicates imputation of more than 50 percent.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1995

**Table B-9. Funds for performance of basic research, applied research, development, funds not distributed, and percent of funds not distributed, by industry, size of company, and source of funds: 1996**

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Industry and size of company	SIC code	Total			Basic research			Applied research		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
[Dollars in millions]										
All Industries.....		\$144,667	\$23,653	\$121,015	\$7,011	\$1,114	\$5,897	\$24,386	\$3,013	\$21,373
Distribution by industry:										
Manufacturing.....		111,864	20,020	91,845	(D)	(D)	3,948	(D)	(D)	15,714
Food, kindred, and tobacco products.....	20,21	1,564	0	1,564	87	0	87	443	0	443
Textiles and apparel.....	22,23	(D)	(D)	414	37	0	37	(D)	(D)	32
Lumber, wood products, and furniture.....	24,25	(D)	(D)	634	29	0	29	(D)	(D)	94
Paper and allied products.....	26	(D)	(D)	1,534	255 (S)	0	255 (S)	(D)	(D)	567 (S)
Chemicals and allied products.....	28	(D)	(D)	17,520	1,322	8	1,314	(D)	(D)	4,651
Industrial chemicals.....	281-82,286	(D)	(D)	5,246	(D)	(D)	599	(D)	(D)	1,260
Drugs and medicines.....	283	9,773	3	9,769	(D)	(D)	651	(D)	(D)	2,401
Other chemicals.....	284-85,287-89	2,505	0	2,505	64	0	64	991	0	991
Petroleum refining and extraction.....	13,29	1,654	24	1,630	(D)	(D)	(D)	416	2	414
Rubber products.....	30	(D)	(D)	1,269	(D)	(D)	55	(D)	(D)	188
Stone, clay, and glass products.....	32	468	5	463	(D)	(D)	19	(D)	(D)	148
Primary metals.....	33	(D)	(D)	637	(D)	(D)	(D)	(D)	(D)	138
Ferrous metals and products.....	331-32,3398-99	(D)	(D)	214	5	(D)	(D)	(D)	0	(D)
Nonferrous metals and products.....	333-36	(D)	(D)	422	(D)	0	(D)	(D)	(D)	(D)
Fabricated metal products.....	34	(D)	(D)	1,322	(D)	(D)	86	(D)	(D)	152
Machinery.....	35	13,455	117	13,338	(D)	(D)	337	(D)	(D)	2,150
Office, computing, and accounting machines.....	357	(D)	(D)	8,132	(D)	(D)	59	(D)	(D)	1,498
Other machinery, except electrical.....	351-56,358-59	(D)	(D)	5,206	(D)	(D)	278	(D)	(D)	653
Electrical equipment.....	36	22,498	2,143	20,356	(D)	(D)	443	(D)	(D)	3,389
Radio and TV receiving equipment.....	365	(D)	(D)	140	21	(D)	(D)	0	(D)	
Communication equipment.....	366	(D)	(D)	4,359	(D)	(D)	59	(D)	(D)	662
Electronic components.....	367	(D)	(D)	12,497	(D)	(D)	(D)	2,665	(D)	(D)
Other electrical equipment.....	361-64,369	(D)	(D)	3,360	(D)	(D)	217	(D)	(D)	545
Transportation equipment.....	37	32,737	12,202	20,535	(D)	(D)	190	(D)	(D)	1,992
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	14,528	103	(D)	(D)	(D)	(D)	(D)
Other transportation equipment.....	373-75,379	(D)	(D)	298	(D)	0	(D)	86	(D)	(D)
Aircraft and missiles.....	372,376	16,224	10,515	5,710	(D)	(D)	(D)	(D)	(D)	(D)
Professional and scientific instruments.....	38	12,149	3,942	8,207	(D)	(D)	789	934	52	882
Scientific and mechanical measuring instruments...	381-82	(D)	(D)	3,283	(D)	(D)	315	333	18	315
Optical, surgical, photographic, and other instruments.....	384-87	(D)	(D)	4,924	(D)	(D)	474	600	34	567
Other manufacturing industries 1/.....	27,31,39	(D)	(D)	2,423	(D)	(D)	234	924	451	473

**Table B-9. Funds for performance of basic research, applied research, development, funds not distributed, and percent of funds not distributed, by industry, size of company, and source of funds: 1996**

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Industry and size of company	SIC code	Total			Basic research			Applied research		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
[Dollars in millions]										
Distribution by industry:										
Nonmanufacturing.....		\$32,803	\$3,633	\$29,170	(D)	(D)	\$1,949	(D)	(D)	\$5,659
Transportation and utilities.....	40-42,44-49	4,678	186	4,492	(D)	(D)	(D)	(D)	(D)	(D)
Communications.....	48	(D)	(D)	3,970	(D)	0	(D)	(D)	(D)	(D)
Telephone communications.....	481	(D)	(D)	3,897	(D)	0	(D)	(D)	(D)	(D)
Other communications.....	482-484,489	73	0	73	(D)	0	(D)	16	(D)	(D)
Electric, gas, and sanitary services.....	49	352	42	311	14	0	14	(D)	(D)	73
Other transportation and utilities.....	40-42,44-47	(D)	(D)	211	(D)	(D)	(D)	(D)	0	(D)
Trade.....	50-59	6,389	51 (S)	6,338	(D)	(D)	391	1,462	0	1,462
Finance, insurance, and real estate.....	60-65,67	(D)	(D)	1,280	12	(D)	(D)	(D)	0	(D)
Services.....	701,72,73,75-81, 83,84,87,89	19,022	3,118	15,904	1,618	306	1,312	3,952	1,006 (S)	2,946
Business services.....	73	10,641	361	10,280	550	48	501	1,328	51	1,277
Computer and data processing services.....	737	(D)	(D)	10,025	510	48	461	(D)	(D)	1,244
Other business services.....	731-736,738	(D)	(D)	255	40	0	40	(D)	(D)	33
Health services.....	80	(D)	(D)	735 (S)	(D)	(D)	51	(D)	(D)	252 (S)
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	715 (S)	3	713 (S)	48	(D)	(D)	(D)	(D)	(D)
Other health services.....	802-805, 808-809	(D)	(D)	23	(D)	0	(D)	12	(D)	(D)
Engineering and management services.....	87	7,318	2,746	4,572	992	256	735	2,324	949 (S)	1,376
Engineering, architectural, and surveying.....	871	1,660	994	667	(D)	(D)	(D)	(D)	(D)	(D)
Research, development, and testing.....	873	5,484	1,708 (S)	3,776	762	114	648	1,772	603 (S)	1,168
Other engineering and management services....	872,874	173	45	129	(D)	(D)	(D)	(D)	(D)	(D)
Other services.....	701,72,75-79,81, 83,84,89	(D)	(D)	317	(D)	(D)	24	(D)	(D)	42
Other nonmanufacturing industries 1/.....	07-12,14,15, 161-162,17	(D)	(D)	1,156	44	0	44	547	218	329

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See explanatory information and SOURCE at end of table.

**Table B-9. Funds for performance of basic research, applied research, development, funds not distributed, and percent of funds not distributed, by industry, size of company, and source of funds: 1996**

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Industry and size of company	SIC code	Total			Basic research			Applied research		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
[Dollars in millions]										
Distribution by size of company: [Number of employees]										
Total.....		\$144,667	\$23,653	\$121,015	\$7,011	\$1,114	\$5,897	\$24,386	\$3,013	\$21,373
Fewer than 500.....		20,249	2,301	17,948	2,075	231	1,844	5,264	1,159	4,105
500 to 999.....		4,637	219	4,418	(D)	(D)	443	(D)	(D)	1,080
1,000 to 4,999.....		18,273	512	17,761	1,355	78	1,277	3,597	59	3,538
5,000 to 9,999.....		11,537	468	11,068	(D)	(D)	353	2,160	168	1,992
10,000 to 24,999.....		20,164	1,031 (S)	19,133	1,136	3 (S)	1,133	3,613	63 (S)	3,550
25,000 or more.....		69,808	19,122	50,686	(D)	(D)	847	(D)	(D)	7,108

See explanatory information and SOURCE at end of table.

**Table B-9. Funds for performance of basic research, applied research, development, funds not distributed, and percent of funds not distributed, by industry, size of company, and source of funds: 1996**

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Industry and size of company	SIC code	Development			Expenditures not distributed			Percent of expenditures not distributed		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
		[Dollars in millions]								
All Industries.....		\$91,852	\$14,420 (S)	\$77,434	\$21,418	\$5,106	\$16,311	14.8%	21.6%	13.5%
Distribution by industry:										
Manufacturing.....		69,607	12,741	56,868	20,004	4,689	15,315	17.9	23.4	16.7
Food, kindred, and tobacco products.....	20,21	835	0	835	199	0	199	12.7	0.0	12.7
Textiles and apparel.....	22,23	(D)	(D)	236	(D)	(D)	109	26.2	0.0	26.3
Lumber, wood products, and furniture.....	24,25	371	0	371	(D)	(D)	140	21.9	9.1	22.1
Paper and allied products.....	26	(D)	(D)	420	(D)	(D)	292	18.5	0.0	19.0
Chemicals and allied products.....	28	(D)	(D)	8,297	(D)	(D)	(D)	18.1	0.0	(D)
Industrial chemicals.....	281-82,286	(D)	(D)	2,590	(D)	(D)	(D)	13.9	0.0	(D)
Drugs and medicines.....	283	4,379	2 (S)	4,376	2,341	0	2,341	24.0	0.0	24.0
Other chemicals.....	284-85,287-89	1,329	0	1,329	121	0	121	4.8	0.0	4.8
Petroleum refining and extraction.....	13,29	(D)	(D)	(D)	(D)	0	(D)	(D)	0.0	(D)
Rubber products.....	30	(D)	(D)	780	(D)	(D)	246	17.7	0.0	19.4
Stone, clay, and glass products.....	32	(D)	(D)	255	41	0	41	8.8	0.0	8.9
Primary metals.....	33	598 (S)	(D)	(D)	190	(D)	(D)	20.0	1.0	(D)
Ferrous metals and products.....	331-32,3398-99	(D)	(D)	(D)	(D)	0	(D)	(D)	0.0	(D)
Nonferrous metals and products.....	333-36	(D)	(D)	176	(D)	(D)	(D)	22.7	1.0	(D)
Fabricated metal products.....	34	(D)	(D)	594	(D)	(D)	490	38.7	75.0	37.1
Machinery.....	35	9,412	67	9,345	(D)	(D)	1,506	(D)	(D)	11.3
Office, computing, and accounting machines.....	357	(D)	(D)	5,920	(D)	(D)	655	8.0	0.0	8.1
Other machinery, except electrical.....	351-56,358-59	(D)	(D)	3,424	(D)	(D)	851	16.3	13.6	16.3
Electrical equipment.....	36	11,075	316	10,761	(D)	(D)	5,763	(D)	(D)	28.3
Radio and TV receiving equipment.....	365	(D)	(D)	102	(D)	0	(D)	5.0	0.0	(D)
Communication equipment.....	366	3,466	30	3,437	(D)	(D)	201	13.3	92.7	4.6
Electronic components.....	367	4,869	47	4,822	(D)	(D)	(D)	44.5	59.5	(D)
Other electrical equipment.....	361-64,369	(D)	(D)	2,401	(D)	(D)	197	5.3	0.0	5.9
Transportation equipment.....	37	25,833	9,225 (S)	16,607	3,509	1,763	1,746	10.7	14.4	8.5
Motor vehicles and motor vehicles equipment.....	371	(D)	(D)	13,673	(D)	(D)	(D)	0.5	0.0	0.6
Other transportation equipment.....	373-75,379	(D)	(D)	82	(D)	(D)	(D)	48.4	51.1	(D)
Aircraft and missiles.....	372,376	10,682	7,830 (S)	2,852	3,153	1,628	1,525	19.4	15.5	26.7
Professional and scientific instruments.....	38	(D)	(D)	5,834	(D)	(D)	702	(D)	(D)	8.6
Scientific and mechanical measuring instruments...	381-82	(D)	(D)	2,089	(D)	(D)	564	30.9	42.7	17.2
Optical, surgical, photographic, and other instruments.....	384-87	(D)	(D)	3,745	(D)	(D)	138	2.8	3.6	2.8
Other manufacturing industries 1/.....	27,31,39	1,650	79	1,571	(D)	(D)	145	5.1	0.9	6.0

**Table B-9. Funds for performance of basic research, applied research, development, funds not distributed, and percent of funds not distributed, by industry, size of company, and source of funds: 1996**

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Industry and size of company	SIC code	Development			Expenditures not distributed			Percent of expenditures not distributed		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
		[Dollars in millions]						[Percent]		
<b>Distribution by industry:</b>										
Nonmanufacturing.....		\$22,245	\$1,679 (S)	\$20,566	\$1,414	\$418 (S)	\$996	4.3%	11.5%	3.4%
Transportation and utilities.....	40-41,44-49	3,560	164	3,395	(D)	(D)	78	(D)	(D)	1.7
Communications.....	48	(D)	(D)	3,038	(D)	0	(D)	(D)	0.0	(D)
Telephone communications.....	481	(D)	(D)	2,982	0	0	0	0.0	0.0	0.0
Other communications.....	482-484,489	(D)	(D)	55	(D)	0	(D)	(D)	0.0	(D)
Electric, gas, and sanitary services.....	49	(D)	(D)	190	34	0	34	9.7	0.0	10.9
Other transportation and utilities.....	40-42,44-47	163	0	163	58	(D)	(D)	(D)	100.0	(D)
Trade.....	50-59	(D)	(D)	4,262	223	0	223	3.5	0.0	3.5
Finance, insurance, and real estate.....	60-65,67	1,171	0	1,171	(D)	(D)	(D)	0.5	100.0	(D)
Services.....	701,72,73,75-81, 83,84,87,89	12,417	1,458 (S)	10,959	1,035 (S)	348 (S)	687 (S)	5.4	11.2	4.3
Business services.....	73	7,993	114	7,879	770 (S)	148	623 (S)	7.2	41.0	6.1
Computer and data processing services.....	737	(D)	(D)	7,706	(D)	148	(D)	7.3	(D)	(D)
Other business services.....	731-736,738	(D)	(D)	173	(D)	0	(D)	3.3	0.0	(D)
Health services.....	80	(D)	(D)	431 (S)	(D)	0	(D)	(D)	0.0	(D)
Offices and clinics of medical doctors, hospitals, medical and dental labs.....	801,806,807	(D)	(D)	(D)	(D)	0	(D)	(D)	0.0	(D)
Other health services.....	802-805, 808-809	(D)	0	(D)	0	0	0	0.0	0.0	0.0
Engineering and management services.....	87	3,738	1,340 (S)	2,397	264 (S)	201 (S)	64	3.6	7.3	1.4
Engineering, architectural, and surveying.....	871	913	530	384	(D)	(D)	(D)	(D)	(D)	(D)
Research, development, and testing.....	873	2,725	810 (S)	1,915	225 (S)	181 (S)	45	4.1	10.6	1.2
Other engineering and management services....	872,874	98	1	97	(D)	(D)	(D)	(D)	(D)	(D)
Other services.....	701,72,75-79,81, 83,84,89	(D)	(D)	251	(D)	0	(D)	(D)	0.0	(D)
Other nonmanufacturing industries 1/.....	07-12,14,15, 161-162,17	(D)	(D)	778	(D)	(D)	(D)	4.0	18.5	(D)

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See explanatory information and SOURCE at end of table.

**Table B-9. Funds for performance of basic research, applied research, development, funds not distributed, and percent of funds not distributed, by industry, size of company, and source of funds: 1996**

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Industry and size of company	SIC code	Development			Expenditures not distributed			Percent of expenditures not distributed		
		Total	Federal	Company	Total	Federal	Company	Total	Federal	Company
		[Dollars in millions]						[Percent]		
Distribution by size of company: [Number of employees]										
Total.....		\$91,852	\$14,420 (S)	\$77,434	\$21,418	\$5,106	\$16,311	14.8%	21.6%	13.5%
Fewer than 500.....		11922	726	11197	988	185	802	4.9	8.0	4.5
500 to 999.....		2603	123	2480	(D)	(D)	415 (S)	(D)	(D)	9.4
1,000 to 4,999.....		11754	250	11504	1567	125 (S)	1442	8.6	24.4	8.1
5,000 to 9,999.....		8171	289	7881	(D)	(D)	842	(D)	(D)	7.6
10,000 to 24,999.....		11645	665 (S)	10980	3770	300	3470	18.7	29.1	18.1
25,000 or more.....		45758	12368 (S)	33392	13805	4464	9341	19.8	23.3	18.4

1/ Beginning in 1996 manufacturing companies with fewer than 50 employees and nonmanufacturing companies with fewer than 15 employees were sampled separately without regard to industry classification to minimize year-to-year variation in survey estimates. Estimates for manufacturing companies in this group are combined with those for companies in "Other manufacturing industries." Estimates for nonmanufacturing companies in this group are combined with those for companies in "Other nonmanufacturing industries." As a result, statistics for "Other manufacturing industries" and for "Other nonmanufacturing industries" for 1996 are not comparable with statistics for prior years.

**KEY:** (D) = Data have been withheld to avoid disclosing operations of individual companies.  
(S) = Indicates imputation of more than 50 percent.

**SOURCE:** National Science Foundation, Division of Science Resources Studies, Survey of Industrial Research and Development: 1996